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AD-679 400

A DDC BIBLIOGRAPHY ON  
**COMPUTERS IN INFORMATION SCIENCES**

(Information Sciences Series)

**VOLUME I OF III VOLUMES**

**DDC-TAS-68-49**

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OCTOBER 1968

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## P R E F A C E

Any discussion of information systems of the future predicts dynamic interactions between the user and the computer. This bibliography compiles references, cataloged by DDC since 1953, that deal specifically with the role of computers in the information sciences.

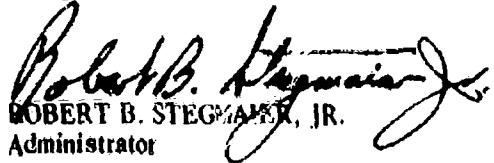
The 488 unclassified and unlimited references are divided into two volumes. Volume I contains 249 references grouped under two major headings: Time Shared, On-Line, and Real Time Systems; and Computer Components. Volume II contains 239 references grouped under three major headings: Artificial and Programming Languages, Computer Processing of Analog Data, and Computer Processing of Digital Data. These headings correspond directly with those of the Panel on Information Technology, Committee on Scientific and Technical Information, Federal Council for Science and Technology.

The references are arranged in accession number (AD number) sequence within each heading. Four indexes, AD-Numeric, Corporate Author/Monitoring Agency, Personal Author, and Contract, are appended for each volume to facilitate access to references.

An unclassified and limited version has been compiled and  
will be announced in the Technical Abstract Bulletin (TAB).

BY ORDER OF THE DIRECTOR, DEFENSE SUPPLY AGENCY

OFFICIAL

  
ROBERT B. STEGMAYER, JR.  
Administrator  
Defense Documentation Center

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## **TIME SHARED, ON-LINE AND REAL TIME SYSTEMS**

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-285 851

MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS  
LAB

A TIME SHARING SYSTEM FOR THE PDP-1 COMPUTER

(U)

IV YATES, JOHN E.

UNCLASSIFIED REPORT

DESCRIPTORS: \*DIGITAL COMPUTERS; \*PROGRAMMING  
(COMPUTERS); SCHEDULING

(U)

A SYSTEM FOR TIME-SHARING A PDP-1 DIGITAL COMPUTER  
WITH SEVEN TYPEWRITERS, TWO PAPER TAPE PUNCHES;  
TWO PAPER TAPE READERS, AND TWO CRT DISPLAYS.

1

UNCLASSIFIED

A00396

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: A00396

AD-414 864

THOMPSON RAMO WOOLDRIDGE INC CANOGA PARK CALIF

AN ON-LINE COMPUTING CENTER.

(U)

DESCRIPTIVE NOTE: FINAL REPT., 11 FEB 62-11 FEB 63,

J10P FRIED,GURTON D. I

CULLER, GLEN J. I

MONITOR: RADC

TDR63 160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, DIGITAL

COMPUTERS), (+DIGITAL COMPUTERS, DATA PROCESSING

SYSTEMS), PROGRAMMING (COMPUTERS), MATHEMATICAL LOGIC,

COMPUTER LOGIC

(U)

IDENTIFIERS: INFORMATION PROCESSING, ON-LINE

(U)

COMPUTING, 1963

AN ON-LINE COMPUTING SYSTEM HAS BEEN DEVELOPED  
WHICH ALLOWS DIRECT USE OF A HIGH SPEED DIGITAL  
COMPUTER BY MATHEMATICIANS AND SCIENTISTS IN THEIR  
SPECIALIZED FIELDS. THIS REPORT DESCRIBES THE  
SYSTEM IN DETAIL FROM A USER'S POINT OF VIEW. FOR  
REFERENCE PURPOSES, THE REPORT INCLUDES A LISTING OF  
ALL COMPUTER PROGRAMS USED IN THE SYSTEM.

(U)

(AUTHOR)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-420 516

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
REAL-TIME COMPUTER STUDIES OF BARGAINING BEHAVIOR

THE EFFECTS OF THREAT UPON BARGAINING,

(U)

SEP 63 12P SHURE, GERALD H. I

MEEKER, ROBERT J. I

REPT. NO. SP1143 000 01

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES:

DESCRIPTORS: (+SOCIAL COMMUNICATION, PSYCHOLOGY),  
(+BEHAVIOR, FOREIGN POLICY), (+POLITICAL SCIENCE,  
EMOTIONS), OPERATIONS RESEARCH, SIMULATION,  
COMPUTERS

(U)

IDENTIFIERS: 1963, BARGAINING, THREAT, INTERNATIONAL  
RELATIONS, HOSTILITY, REAL TIME

(U)

REPORTS ON A COMMUNICATION GAME, IN WHICH THE  
COMPUTER IS USED AS AN EXPERIMENTAL TOOL FOR ON-LINE  
ANALYSIS, UMPIRING, CONTROL AND RECORDING OF SUBJECT  
BEHAVIOR. ALSO REPORTS THAT THE COMPUTER IS  
PROGRAMMED TO AID IN THE COLLECTION AND ASSESSMENT OF  
SUBJECTIVE DATA - TO PROBE SUBJECTS AS TO THEIR  
INTENTIONS AND PERCEPTIONS AT CRITICAL POINTS IN THE  
DEVELOPMENT OF THE BARGAINING PROCESS. STATES THAT  
THESE DATA SHOULD SUPPLANT A GREAT DEAL OF THE NEED  
TO SPECULATE ABOUT THE PATTERNS OF INTENTION AND  
PERCEPTIONS WHICH PRODUCE THE OVERT RESULTS OBTAINED.  
(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-426 S27

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
A REPORT ON A LARGE-SCALE TIME-SHARING SYSTEM. (U)  
NOV 63 ISP SCHWARTZ, JULES I. I

REPT. NO. SP1361  
CONTRACT SDP7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PAPER PRESENTED AT THE DIGITAL EQUIPMENT USERS SOCIETY, 18 NOV 63.

DESCRIPTORS: (+COMPUTERS, PROGRAMMING (COMPUTERS)), DESIGN, INPUT-OUTPUT DEVICES (U)  
IDENTIFIERS: AN/FSQ-32, 1963, TIME-SHARING SYSTEM (U)

THE SYSTEM DEVELOPMENT CORPORATION, UNDER ARPA SPONSORSHIP, HAS DEVELOPED A TIME-SHARING SYSTEM ON THE Q-32 COMPUTER. TIME-SHARING, IN THIS CASE, IMPLIES SIMULTANEOUS ACCESS TO THE COMPUTER BY A LARGE NUMBER OF INDEPENDENT USERS. THE GOAL OF THE SYSTEM IS TO PROVIDE ESSENTIALLY IMMEDIATE RESPONSE TO QUERIES FROM ALL USERS. USERS HAVE AT THEIR DISPOSAL KEYBOARDS (PRIMARILY TELETYPE), DISPLAYS, AND OTHER COMPUTERS. THESE DEVICES CAN BE OPERATED FROM LOCAL (WITHIN SDC SANTA MONICA) OR REMOTE STATIONS. THE SYSTEM HAS BEEN OPERATIONAL SINCE JUNE, 1963. IT PERMITS PROGRAM PRODUCTION AND DEBUGGING, EXPERIMENTATION WITH HUMAN SUBJECTS, RAPID ON-LINE PROGRAMMING AND COMPUTATION, AND OTHER FUNCTIONS WHICH CAN BENEFIT FROM COMPUTER-HUMAN INTERACTION. THIS PAPER DISCUSSES THE SYSTEM AS IT APPEARS TO THE USER, THE GENERAL DESIGN OF THE SYSTEM, AND RELATES SOME OF THE EXPERIENCE HAD IN USING THE SYSTEM. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-462 158

MASSACHUSETTS INST OF TECH CAMBRIDGE COMPUTATION  
CENTER

TIME-SHARING ON A MULTICONSOLE COMPUTER, (U)  
MAR 65 23P SAMUEL, ARTHUR L, I

REPT. NO. MAC-TR-17  
CONTRACT: NONR410201

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*DIGITAL COMPUTERS, TIME), (\*TIME,  
SCHEDULING), REVIEWS, SCHEDULING, COSTS, CONTROL  
SYSTEMS, PROGRAMMING (COMPUTERS), PROGRAMMING  
LANGUAGES

IDENTIFIERS: MAC PROJECT, TIME-SHARING

(U)

(U)

AFTER A BRIEF HISTORICAL REVIEW AND A DESCRIPTION  
OF THE THREE BASIC TYPES OF TIME-SHARING SYSTEMS, THE  
GENERAL PURPOSE TIME-SHARING SYSTEM AS EXEMPLIFIED BY  
THE M.I.T. CTSS SYSTEM IS DESCRIBED IN  
GENERAL TERMS, WITH PARTICULAR ATTENTION TO THE WAY  
THE SYSTEM LOOKS TO THE USER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-470 715

MASSACHUSETTS INST OF TECH CAMBRIDGE  
AN ANALYSIS OF TIME-SHARED COMPUTER SYSTEMS. (U)

DESCRIPTIVE NOTE: DOCTORAL THESIS, 29 DEC 64-4 FEB 65.

JUN 65 170P SCHERR, ALLAN L. I

REPT. NO. MAC-TR-10 (THESIS)

CONTRACT NO NR0410201

PROJ: NR048 107

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, SCHEDULING),  
OPERATION, SIMULATION, MATHEMATICAL MODELS,  
STATISTICAL PROCESSES, MATHEMATICAL PREDICTION,  
PROGRAMMING(COMPUTERS), REAL TIME (U)  
IDENTIFIERS: MAC PROJECT, THESIS (U)

SOME OF THE ASPECTS OF THE OPERATION OF TIME-SHARED, INTERACTIVE COMPUTER SYSTEMS ARE ANALYZED. THE EMPHASIS IS ON THE REACTION OF HARDWARE SYSTEMS TO THE DEMANDS THAT ITS USERS MAKE UPON IT. SIMPLY STATED, THE PROBLEM IS TO CHARACTERIZE BOTH TIME-SHARED SYSTEMS AND THEIR USERS IN ORDER TO BE ABLE TO PREDICT THE PERFORMANCE OF THE TWO OPERATING TOGETHER. PORTIONS OF THIS PROBLEM INCLUDE THE SPECIFICATION AND MEASUREMENT OF USER CHARACTERISTICS, THE DEVELOPMENT AND VERIFICATION OF BOTH SIMULATION AND MATHEMATICAL MODELS FOR TIME-SHARED SYSTEMS, AND THE SPECIFICATION AND MEASUREMENT OF PERFORMANCE MATRICS FOR SUCH SYSTEMS. THE USER AND SOME OF THE PERFORMANCE MEASUREMENTS WERE MADE ON PROJECT MAC'S COMPATIBLE TIME-SHARING SYSTEM (CTSS). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-474 019

MASSACHUSETTS INST OF TECH CAMBRIDGE  
CALCULAID: AN ON-LINE SYSTEM FOR ALGEBRAIC  
COMPUTATION AND ANALYSIS. (U)

DESCRIPTIVE NOTE: MASTER'S THESIS,

SEP 65 53P WANTAN, MAYER ELIJAH I

REPT. NO. MAC-TR-20

CONTRACT: NONR410201

PROJ: NRO4B 187

UNCLASSIFIED REPORT

DESCRIPTORS: (\*PROGRAMMING(COMPUTERS),  
DIGITAL COMPUTERS), REAL TIME, SCHEDULING,  
ALGEBRA, PROGRAMMING LANGUAGES, COMPUTER  
LOGIC (U)

IDENTIFIERS: CALCULAID, TIME-SHARING SYSTEMS,  
MAC PROJECT, OPS, ON-LINE COMPUTER SYSTEMS (U)

OPS IS AN ON-LINE SYSTEM DEVELOPED AT PROJECT  
MAC. THE PRESENT WORK PROVIDES A POWERFUL AND  
SIMPLE WAY TO PERFORM NUMERICAL MANIPULATIONS AND  
CALCULATIONS WITHIN OPS. THE PROGRAM PACKAGE IS  
CALLED CALCULAID, AND PROVIDES A METHOD OF  
EXECUTING ALGEBRAIC ASSIGNMENT STATEMENTS, OF WHICH  
MAD AND FORTRAN ASSIGNMENTS ARE A SUBSET. WHEN  
THIS ASSIGNMENT-STATEMENT ABILITY IS COUPLED WITH  
OTHER FEATURES OF THE OPS SYSTEM, MOST OF THE  
ABILITY OF A COMPILER LANGUAGE IS PROVIDED.  
BECAUSE THE PROGRAMS WRITTEN IN OPS ARE EXECUTED  
INTERPRETIVELY, OPS-3 PROGRAMS CAN BE CHANGED AND  
RE-RUN IMMEDIATELY, WITHOUT BEING RECOMPILED. THE  
APPLICATIONS OF CALCULAID TO THE ANALYSIS OF A  
ROUND-ROBIN SCHEDULING MODEL AND TO A PROCESS-CONTROL  
PROBLEM ARE DISCUSSED, AND CONCLUSIONS ARE DRAWN  
REGARDING THE SUITABILITY OF RUNNING COMPUTATIONAL  
PROGRAMS IN AN INTERPRETIVE MODE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-476 443 12/1 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF  
METALLURGY  
MAP, A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS.  
DESCRIPTION OF THE LANGUAGE AND INSTRUCTION H. NUAL, (U)  
JAN 66 104P KAPLOW, ROY STRONG, STEPHEN  
IBRACKETT, JOHN I  
REPT. NO. MAC-TR-24  
CONTRACT: NONR-4102(01)  
PROJ: NR-048-187

UNCLASSIFIED REPORT

DESCRIPTORS: (COMPUTERS, MATHEMATICAL  
ANALYSIS), MAN-MACHINE SYSTEMS, NUMERICAL  
ANALYSIS, INSTRUCTION MANUALS (U)  
IDENTIFIERS: MAC PROJECT, ON-LINE MATHEMATICAL  
ANALYSIS (MAP) (U)

A SYSTEM FOR ON-LINE MATHEMATICAL ANALYSIS, CALLED  
MAP, HAS BEEN DEVELOPED FOR USE WITHIN THE M-107,  
COMPATIBLE TIME SHARING SYSTEM, TAKING  
ADVANTAGE OF THE VARIED USER-MACHINE INTERACTIONS  
WHICH ARE POSSIBLE. MAP PROVIDES A FACILITY FOR  
HANDLING COMPLEX ANALYSES, DATA INPUT AND  
PRESENTATION OF RESULTS WITHOUT REQUIRING ANY  
COMPUTER PROGRAMMING BY THE USER. THIS REPORT IS A  
DESCRIPTION OF THE LANGUAGE AND A SELF-TEACHING USER  
MANUAL. IT DOES NOT DESCRIBE THE TECHNIQUES USED TO  
IMPLEMENT THE SYSTEM. WHEN GIVEN INCOMPLETE  
REQUESTS, THE SYSTEM WILL PROVIDE INSTRUCTIONS  
REGARDING THE USE OF ITS PROCEDURES AND WILL ASK FOR  
ALL THE PARAMETERS, VALUES AND OPTION DECISIONS WHICH  
MAY BE REQUIRED. IF THE REQUESTS ARE CORRECT AND  
SUFFICIENTLY DETAILED, THE COMPUTER WILL PROCEED  
DIRECTLY TO THE CALCULATIONS AND, ON COMMAND, PRESENT  
THE RESULTS IN GRAPHICAL OR TYPEWRITTEN FORM.  
PROVISIONS HAVE ALSO BEEN INCLUDED TO ALLOW THE  
EXPANSION AND PERSONALIZATION OF THE SYSTEM IN  
WHATEVER MANNER IS DESIRED BY INDIVIDUAL USERS.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-601 649

IIT RESEARCH INST CHICAGO ILL  
A STUDY OF DIGITAL COMPUTERS FOR A REAL TIME TRAINING  
SIMULATION RESEARCH SYSTEM. (U)

DESCRIPTIVE NOTE: REPT. FOR 1 MAY-30 JUN 63

MAY 64 111P ANDRESEN,KENNETH W. I  
EWING,DUNCAN I

REPT. NO. H6003 2 REV.  
CONTRACT AF33 657 11007 ,PROJ.  
PROJ: TASK  
MONITORI AHRL TOR64 22

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, FLIGHT SIMULATORS),  
(+FLIGHT SIMULATORS, DIGITAL COMPUTERS), (+REAL TIME,  
TRAINING DEVICES), SIMULATION, SPECIAL PURPOSE  
COMPUTERS, ANALOG-TO-DIGITAL CONVERTERS, MULTIPLEX,  
DIGITAL-TO-ANALOG CONVERTERS, TIME-INTERVAL COUNTERS,  
SYSTEMS ENGINEERING, CONTROL SEQUENCES (U)

IDENTIFIERS: UDOFT, PB1440 COMPUTER, SDS 930  
COMPUTER, F100 AIRCRAFT, EROS SIMULATION (U)

IN THE STUDY PHASE OF THE PROJECT TO PROVIDE A  
GENERAL PURPOSE LABORATORY FACILITY FOR USE IN  
RESEARCH IN TRAINING SIMULATION TECHNIQUES, DIGITAL  
COMPUTER SYSTEMS AND INTERFACE EQUIPMENTS WERE  
EVALUATED FOR THE APPLICATION. CRITERIA FOR THE  
SYSTEM EVALUATION WERE OBTAINED FROM PREVIOUS  
STUDIES, INVOLVING THE F100A AIRCRAFT AND EROS  
VEHICLE FLIGHT SIMULATIONS USING THE UDOFT COMPUTER  
FACILITY. REQUIREMENTS FOR THE COMPUTER HINGE ON A  
REAL ON A REAL TIME OPERATING CAPABILITY WHICH  
STRESSES HIGH COMPUTATION RATES. SIGNIFICANT  
CHARACTERISTICS INCLUDE: (1) AN OPERATING RATE  
IN EXCESS OF 75,000 INSTRUCTIONS PER SECOND ON FLIGHT  
SIMULATION PROBLEMS. (2) A MEMORY CAPACITY OF  
AT LEAST 8,000 WORDS, (3) A COMPUTER WORD  
LENGTH OF AT LEAST 24 BITS, AND (4) AT LEAST  
THREE INDEX REGISTERS. THE RESULT OF THE STUDY  
PHASE IS A RECOMMENDATION OF THE PACKARD BELL 440  
AS THE CENTRAL COMPUTER OF THE SIMULATION SYSTEM AND  
AS AN ALTERNATIVE, A RECOMMENDATION OF THE FASVER  
SDS 9300 COMPUTER IS MADE PROVIDED ITS HIGHER COST  
AND LATER DELIVERY TIME ARE ACCEPTABLE. THE  
RECOMMENDED INTERFACE EQUIPMENT WILL INCLUDE A  
MULTIPLEXED ANALOG-TO-DIGITAL CONVERSION SUBSYSTEM  
CAPABLE OF DIGITIZING 32 INPUT CHANNELS TO 12 BITS AT  
A RATE IN EXCESS OF 35,000 CONVERSIONS PER SECOND, A  
DUAL RESOLUTION DIGITAL-TO-ANALOG CONVERSION SYSTEM (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-603 972

RAND CORP SANTA MONICA CALIF  
JOSS: A DESIGNER'S VIEW OF AN EXPERIMENTAL ON-LINE  
COMPUTING SYSTEM,

(U)

AUG 64 36P SHAW, J. C. I  
REF. NO. P-2922

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: THIS PAPER WAS PREPARED FOR  
PRESENTATION AT THE 1964 FALL JOINT COMPUTER  
CONFERENCE, SPONSORED BY THE AMERICAN FEDERATION OF  
INFORMATION PROCESSING SOCIETIES, SAN FRANCISCO,  
27-29 OCT 64.

DESCRIPTORS: (+SPECIAL PURPOSE COMPUTERS, DATA  
PROCESSING SYSTEMS), (+DATA PROCESSING SYSTEMS, INPUT-  
OUTPUT DEVICES), TYPEWRITERS, COMMUNICATION SYSTEMS,  
COMPUTER STORAGE DEVICES; PROGRAMMING LANGUAGES (U)  
IDENTIFIERS: TIME SHARING (COMPUTERS), JOSS (JOHNNIAC  
OPEN-SHOP SYSTEM) (U)

JOSS (JOHNNIAC OPEN-SHOP SYSTEM) IS AN  
EXPERIMENTAL ON-LINE, TIME-SHARED COMPUTING SERVICE.  
IT IS IN DAILY USE BY STAFF MEMBERS OF THE RAND  
CORPORATION FOR THE SOLUTION OF SMALL NUMERICAL  
PROBLEMS. THE USERS COMPOSE STORED PROGRAMS AND  
INTERACT WITH JOSS THROUGH REMOTE TYPEWRITER  
CONSOLES BY USING A SINGLE, HIGH-LEVEL LANGUAGE.  
THE SYSTEM IS DESCRIBED WITH EMPHASIS ON THOSE  
FEATURES WHICH HAVE LED USERS TO ACCEPT IT AS A  
CONVENIENT NEW TOOL. JOSS PROVIDES USE OF FAMILIAR  
TYPEWRITERS, EXACT INPUT/OUTPUT, DECIMAL ARITHMETIC,  
HIGH-LEVEL ALGEBRAIC LANGUAGE WITH ENGLISH  
PUNCTUATION RULES, EASY MODIFICATION AND REPAIR OF  
PROGRAMS, AND REPORT-QUALITY FORMATTED OUTPUT.

(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-605 G25  
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH  
CENTER  
A MATHEMATICAL ANALYSIS OF COMPUTER TIMESHARING  
SYSTEMS. (U)  
DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT. NO. 20  
(MASTER'S THESIS).  
JUL 64 IP PATEL, NITIN RATILAL I  
CONTRACT: NONR4102 D1 GRANT, DA ARO 031 1246158  
MONITOR: AROD 960 37

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON FUNDAMENTAL  
INVESTIGATIONS IN METHODS OF OPERATIONS RESEARCH,  
REPT. ON PROJ. MAC.

DESCRIPTORS: (+COMPUTERS, SCHEDULING), (+SCHEDULING,  
COMPUTERS), REAL TIME, TIME STUDIES, OPERATIONS  
RESEARCH, MANAGEMENT ENGINEERING, MATHEMATICAL  
ANALYSIS (U)  
IDENTIFIERS: ROUND ROBIN SYSTEM, DYNAMIC PRIORITY  
MULTILEVEL SYSTEM (U)

TWO IMPORTANT AND POPULAR TIME-SHARING SYSTEMS WERE  
ANALYSED FOR THE EXPECTED WAITS OF REQUESTS. THESE  
WERE THE ROUND-ROBIN AND THE DYNAMIC-PRIORITY  
MULTILEVEL SYSTEMS. THE ROUND-ROBIN IS  
VERY COMPLEX IN ALL ITS GENERALITY, HOWEVER WITH THE  
AID OF A REALISTIC SIMPLIFYING ASSUMPTION THE DESIRED  
EXPECTED WAITS WERE CALCULATED. THE ROUND-ROBIN  
UNDER WORST CONDITIONS (I.E. 'FULL LOAD') WAS  
ANALYSED RIGOROUSLY. THE DYNAMIC-PRIORITY  
MULTILEVEL SYSTEM CONSIDERED WAS SLIGHTLY  
DIFFERENT FROM THE ONE IMPLEMENTED BY PROF.  
CORBATO OF M.I.T. HERE AGAIN RESULTS WERE  
COMPLEX IN GENERAL, BUT WERE DERIVED GENERALLY  
NEVERTHELESS. SPECIALIZATION OF THESE RESULTS  
SHOULD SIMPLIFY THEM SOMEWHAT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-606 175

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
PRELIMINARY ANALYSES OF TIME-SHARED COMPUTER  
OPERATION.

DESCRIPTIVE NOTE: SCIENTIFIC NEPT.,  
AUG 64 36P COFFMAN, G. G. +JR+1  
KRISHNAMOORTHI, B. I  
REPT. NO. SP-1719  
CONTRACT: 30-97

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTION: ((COMPUTERS, SCHEDULING), ((PROGRAMMING  
(COMPUTERS), OPERATIONS RESEARCH)), OPERATION,  
ANALYSIS, MATHEMATICAL MODELS

IDENTIFIERS: TIME SHARING (COMPUTERS) (U)  
(U)

SEVERAL MODELS OF TIME-SHARED COMPUTER OPERATION  
WERE STUDIED. ALONG WITH THIS ONGOING WORK,  
STATISTICS WERE ALSO COMPILED ON THE OPERATION OF THE  
TIME-SHARING SYSTEM ITSELF. IT IS THE  
PURPOSE OF THE PAPER TO PRESENT PRELIMINARY RESULTS  
OF THESE EFFORTS AND TO DISCUSS PROBLEMS OF DESIGNING  
SCHEDULING ALGORITHMS FOR TIME-SHARED COMPUTER  
SYSTEMS. (AUTHOR)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-607 679

MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION  
LAB

DESIGN OF A SPECIAL PURPOSE DIGITAL SYSTEM. (U)  
DESCRIPTIVE NOTE: MASTER'S THESIS.

JAN 58 100P GREEN, ALAN IRWIN I  
REPT. NO. T-156  
CONTRACT: AF04 645 9  
PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, DIFFERENTIAL  
EQUATIONS), (+DIFFERENTIAL EQUATIONS, DIGITAL  
COMPUTERS), SIMULTANEOUS EQUATIONS, LINEAR SYSTEMS,  
INTEGRATION, TAYLOR'S SERIES, NUMERICAL ANALYSIS,  
EQUATIONS, FUNCTIONS, PROGRAMMING (COMPUTERS), REAL  
TIME, DIGITAL SYSTEMS, ERRORS, DESIGN (U)

DESIGN SPECIFICATIONS ARE DEVELOPED FOR A SPECIAL  
PURPOSE DIGITAL SYSTEM REQUIRED TO PERFORM A REAL  
TIME SOLUTION OF THREE SIMULTANEOUS FIRST ORDER  
LINEAR DIFFERENTIAL EQUATIONS WITH TIME VARYING  
COEFFICIENTS. THE NUMERICAL INTEGRATION PROCEDURE  
FOLLOWED IS BASED ON TAYLOR SERIES EXPANSIONS OF  
THE VARIABLES TO BE INTEGRATED. A PROGRAM OF  
TYPICAL COMPUTER INSTRUCTIONS IS PROPOSED FOR THE  
SOLUTION. AN ERROR ANALYSIS IS PERFORMED TO  
DETERMINE THE PARAMETERS NECESSARY TO CHARACTERIZE  
COMPLETELY THE NUMERICAL SOLUTION AND THE COMPUTER.  
IT IS FOUND THAT A REAL TIME SOLUTION CAN BE  
ACHIEVED IF A SUFFICIENT NUMBER OF TERMS IS KEPT IN  
THE TAYLOR SERIES EXPANSIONS. THIS IS FEASIBLE  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 342

PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF  
ELECTRICAL ENGINEERING  
THE USE OF REAL-TIME COMPUTERS FOR INVENTORY  
CONTROL.

(U)

DESCRIPTIVE NOTE: INTERIM TECHNICAL REPT.,  
NOV 64 TOP SHARP, DONALD D., JR.  
REPT. NO. HSER-64-21  
CONTRACT NOHRSB1 40

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+INVENTORY CONTROL, DIGITAL COMPUTERS);  
(+DATA PROCESSING SYSTEMS, REAL TIME); (+DIGITAL  
COMPUTERS, INVENTORY CONTROL), AUTOMATA, MANAGEMENT  
ENGINEERING, INFORMATION RETRIEVAL, SYSTEMS  
ENGINEERING, LOGISTICS, INDUSTRIES, FEASIBILITY  
STUDIES

(U)

A REAL-TIME SYSTEM PROVIDES IMMEDIATE ACCESS TO  
INFORMATION STORED IN THE COMPUTER BY OPERATING  
PERSONNEL THROUGHOUT THE ORGANIZATION. THE PURPOSE  
OF THIS THESIS IS TO ANALYZE EXISTING AND PROPOSED  
REAL-TIME INVENTORY CONTROL SYSTEMS IN ORDER TO  
DETERMINE THE ADVANTAGES AND DISADVANTAGES OF THIS  
NEW MANAGEMENT TECHNIQUE. ALTHOUGH REAL-TIME  
INVENTORY CONTROL SYSTEMS ARE STILL IN THE  
DEVELOPMENTAL STAGE, AN EXAMINATION OF THE  
IMPLICATIONS OF THESE REAL-TIME SYSTEMS SHOULD  
PROVIDE AN INSIGHT INTO THE POSSIBILITIES FOR WIDE  
SPREAD USE OF REAL-TIME SYSTEMS FOR INVENTORY CONTROL  
AND FOR OTHER BUSINESS APPLICATIONS.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 500

MASSACHUSETTS INST OF TECH CAMBRIDGE  
PROGRAM STRUCTURE IN A MULTI-ACCESS COMPUTER, (U)  
64 16P DENNIS, J. B. I

REPT. NO. MAC-TR-11  
CONTRACT NO NR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (PROGRAMMING (COMPUTERS), MULTIPLE OPERATION), DATA PROCESSING SYSTEMS, COMPUTER STORAGE DEVICES, DYNAMICS, SCHEDULING, COMPILERS, DIGITAL COMPUTERS (U)

IDENTIFIERS: MAC PROJECT, MULTI-ACCESS COMPUTERS (U)

A MULTI-ACCESS COMPUTER (MAC) SYSTEM CONSISTS OF PROCESSING UNITS AND DIRECTLY ADDRESSABLE MAIN MEMORY IN WHICH PROCEDURE INFORMATION IS INTERPRETED AS SEQUENCES OF OPERATIONS ON DATA, A SYSTEM OF TERMINAL DEVICES THROUGH WHICH USERS MAY COMMUNICATE WITH PROCEDURES OPERATING FOR THEM, AND MASS MEMORY WHERE PROCEDURES AND DATA MAY BE HELD WHEN NOT REQUIRED FOR IMMEDIATE REFERENCE. ONE FUNDAMENTAL ATTRACTION OF THE MAC CONCEPT IS THE INCREASED PRODUCTIVITY OF 'COMPUTER CATALYZED RESEARCH' THAT RESULTS FROM CLOSE MAN-MACHINE INTERACTION. ANOTHER ATTRACTION IS WEALTH OF DATA AND PROCEDURES THAT ARE ACCESSIBLE TO A LARGE USER COMMUNITY THROUGH THE FILE MEMORY OF A MAC SYSTEM. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 501

MASSACHUSETTS INST OF TECH CAMBRIDGE  
SYSTEM REQUIREMENTS FOR MULTIPLE ACCESS, TIME-SHARED  
COMPUTERS. (U)

64 14P CORBATO, F. J. I

REPT. NO. MAC-TR-3

CONTRACT: NONR4102 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT MAC.

DESCRIPTORS: (PROGRAMMING (COMPUTERS), MULTIPLE  
OPERATION), (COMPUTERS, SYSTEMS ENGINEERING),

COMPUTER STORAGE DEVICES, DESIGN (U)

IDENTIFIERS: TIME SHARING (COMPUTERS), MAC  
PROJECT (U)

RELOCATION EXAMPLES AND SOLUTIONS WERE ELABORATED  
IN CONSIDERABLE DETAIL TO EXPOSE THE READER TO THE  
DIFFICULTIES ENCOUNTERED WITH CONTEMPORARY MACHINES  
WHEN MULTIPLE USER MULTIPLE-PROCESSOR SYSTEMS ARE  
CONSIDERED. THE FACT THAT EACH PROGRAM MAY PERFORM  
UNEXPECTEDLY, EVEN TO THE USER, DEMANDS THAT RUNNING  
PROGRAMS BE ABLE TO BE MOVED AS WELL AS TO GROW AND  
TO SHRINK. AS MAN-MACHINE INTERACTION BECOMES  
FASTER, EACH PROGRAM TASK BECOMES MORE INTIMATELY  
CONNECTED WITH SECONDARY STORAGE AND WITH COMMON  
SUBPROGRAMS; THUS EFFECTIVE MULTIPROGRAMMING IS  
ESSENTIAL FOR EFFICIENT USE OF A MULTIPLE ACCESS  
COMPUTER SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-608 572

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARING AND USER-ORIENTED COMPUTER SYSTEMS: SOME  
IMPLICATIONS FOR PUBLIC ADMINISTRATORS. (U)

DESCRIPTIVE NOTE: SCIENTIFIC REPT.,

SEP 64 1OP ISAACS, HERBERT H. I  
REPT. NO. SP-1772

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED DURING A PANEL DISCUSSION AT  
THE 1964 NATIONAL CONFERENCE OF THE AMERICAN SOCIETY  
FOR PUBLIC ADMINISTRATION ON 17 APR 64.

DESCRIPTORS: (+INFORMATION RETRIEVAL, MANAGEMENT  
ENGINEERING), (+MANAGEMENT ENGINEERING, INFORMATION  
RETRIEVAL), DIGITAL COMPUTERS, DATA PROCESSING  
SYSTEMS, PROGRAMMING (COMPUTERS), OPERATIONS RESEARCH,  
GOVERNMENT EMPLOYEES, POLICE (U)

THE MATERIAL CONTAINED IN THIS PAPER WAS PRESENTED  
DURING A PANEL DISCUSSION AT THE 1964 NATIONAL  
CONFERENCE OF THE AMERICAN SOCIETY FOR PUBLIC  
ADMINISTRATION ON APRIL 17, 1964. THIS WRITTEN  
VERSION IS TO BE PUBLISHED IN THE PROCEEDINGS OF THAT  
CONFERENCE. IT CONTAINS A BRIEF SUMMARY OF SOME  
NEW ADVANCEMENTS IN COMPUTER SYSTEM TECHNOLOGY AND  
THEIR IMPLICATIONS FOR PUBLIC ADMINISTRATION. THE  
NEW TECHNIQUES ARE DESCRIBED IN TERMS OF HOW THEY  
RELATE TO THREE BASIC CATEGORIES OF INFORMATION  
PROCESSING TASKS. AN EXAMPLE OF ONE ADVANCED  
APPLICATION IN THE LOS ANGELES POLICE  
DEPARTMENT IS THEN GIVEN. THE PAPER CONCLUDES  
WITH A DISCUSSION OF SOME BROAD IMPLICATIONS FOR THE  
PUBLIC ADMINISTRATOR. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-607 200

MASSACHUSETTS INST OF TECH CAMBRIDGE  
A NEW METHODOLOGY FOR COMPUTER SIMULATION. (U)  
64 30P GREENBERGER, MARTIN I  
REPT. NO. MAC-TR-13  
CONTRACT: NONR410201  
PROJ: NRD46 187

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC PRESENTED AT  
THE CONFERENCE ON COMPUTER METHODS IN THE ANALYSIS  
OF LARGE-SCALE SOCIAL SYSTEMS, SPONSORED BY THE  
JOINT CENTER FOR URBAN STUDIES OF THE  
MASSACHUSETTS INST. OF TECH. AND HARVARD UNIV.  
CAMBRIDGE, MASS., 19-21 OCT 64. SEE ALSO AD-604  
681.

DESCRIPTORS: (+COMPUTERS, SIMULATION), SPECIAL  
PURPOSE COMPUTERS, OPERATIONS RESEARCH, DATA  
PROCESSING SYSTEMS, SCIENTIFIC RESEARCH (U)

IDENTIFIERS: MAC PROJECT, OPS-2, TIME-SHARING  
PROGRAMMING SYSTEMS, ON-LINE SYSTEMS (U)

COMPUTER SIMULATION IS A COOPERATIVE VENTURE  
BETWEEN RESEARCHER AND INFORMATION PROCESSOR, BUT THE  
PROCESSOR'S ROLE CUSTOMARILY BEGINS TOO LATE. THE  
RESEARCHER CAN BENEFIT SUBSTANTIALLY BY BRINGING THE  
COMPUTER UP INTO THE EARLIER, CREATIVE PHASES OF THE  
SIMULATION PROCESS. AN ON-LINE COMPUTER SYSTEM THAT  
MAKES THIS POSSIBLE IS DESCRIBED. THE OPS SYSTEM  
IS OPEN-ENDED AND MODULAR IN A VERY FUNDAMENTAL  
SENSE. THE USER CAN ADD HIS OWN PARTS OVER A  
PERIOD OF DAYS OR MONTHS AS HE INCREASES HIS  
UNDERSTANDING OF HIS PROBLEM. THE OPS SYSTEM IS  
RELATIVELY FREE OF RULES AND FORMATS. THE USER  
CREATES HIS OWN LANGUAGE AND HIS OWN CONVENTIONS.  
HE HAS THE WIDEST LATITUDE TO EXPRESS HIS PROBLEM  
IN ITS NATURAL TERMS AND TO BE INVENTIVE.  
GRADUALLY HIS SYSTEM TAKES ON AN INDIVIDUAL  
CHARACTER APPROPRIATE TO THE PURPOSE IT IS TO SERVE.  
THE USER CAN CREATE HIS OWN SYMBOLS AND HIS OWN  
MAPPING OF COMMON STORAGE BY MEANS OF STANDARD  
OPERATORS. HE CAN ALSO CREATE HIS OWN OPERATORS  
AND ADD THEM WITHOUT LIMIT TO THE SET OF STANDARD  
OPERATORS SUPPLIED TO HIM. OPERATORS ARE  
FUNCTIONAL SUBROUTINES PROGRAMMED IN ANY LANGUAGE  
THAT THE COMPUTER CAN COMPILE, SUCH AS FORTRAN, MAD,  
OR FAP. OPS-2 PROVIDES THE USER WITH A SIMPLE  
MECHANISM FOR COMPOUNDING OPERATORS OR CREATING K-  
OPS. A K-OP TABLE IN COMMON STORAGE HAS ONE  
LINE FOR EACH OPERATOR IN THE CONCATENATION OF (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 296

MASSACHUSETTS INST OF TECH CAMBRIDGE  
THE MAC SYSTEM: A PROGRESS REPORT,  
OCT 64 25 FANO, R. M. I  
REPT. NO. MAC-TR-12  
CONTRACT: NONR41020!

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC. PAPER  
PRESENTED AT THE SYMPOSIUM ON COMPUTER AUGMENTATION OF  
HUMAN REASONING, WASHINGTON, D. C., 16 JUN 64, AND  
PREPARED FOR PUBLICATION IN IEEE SPECTRUM, JAN. 1965.  
SEE ALSO AD-608 502.

DESCRIPTORS: (\*COMPUTERS, MULTIPLE OPERATION),  
(\*SPECIAL PURPOSE COMPUTERS, MULTIPLE OPERATION),  
(\*INFORMATION RETRIEVAL, MULTIPLE OPERATION), REAL  
TIME, PROGRAMMING (COMPUTERS), PROGRAMMING LANGUAGES,  
DATA PROCESSING SYSTEMS, DATA TRANSMISSION SYSTEMS,  
SYSTEMS ENGINEERING

(U)

IDENTIFIERS: MAC PROJECT, IBM-7094, MAN-MACHINE  
SYSTEMS, TIME-SHARING PROGRAMMING SYSTEMS, POP-1  
COMPUTER

(U)

THE NOTION OF MACHINE-AIDED COGNITION IMPLIES AN  
INTIMATE COLLABORATION BETWEEN A HUMAN USER AND A  
COMPUTER IN A REAL-TIME DIALOGUE ON THE SOLUTION OF A  
PROBLEM, IN WHICH THE TWO PARTIES CONTRIBUTE THEIR  
BEST CAPABILITIES. IN ORDER FOR THIS INTIMATE  
COLLABORATION TO BE POSSIBLE, A COMPUTER SYSTEM IS  
NEEDED THAT CAN SERVE SIMULTANEOUSLY A LARGE NUMBER  
OF PEOPLE, AND THAT IS EASILY ACCESSIBLE TO THEM,  
BOTH PHYSICALLY AND INTELLECTUALLY. THE PRESENT  
MAC SYSTEM IS A FIRST STEP TOWARD THIS GOAL.  
THE PURPOSE OF THIS PAPER IS TO PRESENT A BRIEF  
DESCRIPTION OF THE CURRENT SYSTEM, TO REPORT ON THE  
EXPERIENCE GAINED FROM ITS OPERATION, AND TO INDICATE  
DIRECTIONS ALONG WHICH FUTURE DEVELOPMENTS ARE  
LIKELY TO PROCEED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-609 500

MITRE CORP BEDFORD MASS

THE ROLE OF SIMULATION AND DATA REDUCTION PROGRAMS IN  
THE DEVELOPMENT OF REAL-TIME SYSTEMS. (U)

DEC 64 SIP LAFFERTY, EDWARD L. I.

REPT. NO. MITRE SR-126

CONTRACT: AFIT 628 2390

PROJ: 416.1

MONITOR: ESD , TOR64 169

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, AIR  
DEFENSE COMMAND), (+MODELS (SIMULATIONS), COMMAND AND  
CONTROL SYSTEMS), (+DATA PROCESSING SYSTEMS, COMMAND  
AND CONTROL SYSTEMS), (+PROGRAMMING (COMPUTERS),  
COMMAND AND CONTROL SYSTEMS), DIGITAL COMPUTERS, REAL  
TIME, MONTE CARLO METHOD, SYSTEMS ENGINEERING, GROUND  
SUPPORT EQUIPMENT, COMMUNICATION SYSTEMS, AIR FORCE,  
SIMULATION (U)

IDENTIFIERS: AIR FORCE SYSTEM 416, SAGE (U)  
(U)

THIS REPORT DEALS WITH THE VALUABLE USE OF  
SIMULATION AND DATA REDUCTION COMPUTER PROGRAMS IN  
THE ACQUISITION AND ENGINEERING OF COMMAND AND  
CONTROL SYSTEMS. THE VALUE OF SIMULATIONS,  
ESPECIALLY IN FACILITATING THE LEARNING PROCESS AND  
IN EXPEDITING SYSTEM DESIGN, IS DESCRIBED. DATA  
REDUCTION IS SHOWN TO BE AN EVOLUTIONARY PROCESS AND  
THE DESIGN OF A DATA REDUCTION SYSTEM SHOULD BE  
CONSIDERED IN THE VERY EARLY STAGES OF SYSTEM  
ACQUISITION. SOME MODEL SIMULATION AND DATA  
REDUCTION SYSTEM SOFTWARE ARE EXAMINED AND SEVERAL  
CONSIDERATIONS IN THEIR DESIGN ARE ENUMERATED. THE  
IMPORTANCE OF THE SYSTEM ENGINEER'S RECOGNITION OF  
THE CONSTANTLY CHANGING NATURE OF ALL HIS  
INSTRUMENTATION IS STRESSED AS BEING ALL-IMPORTANT IN  
THE DESIGN OF SUPPORT SYSTEMS WHICH PROVIDE AN  
OVERALL EFFECTIVENESS. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AC-607 720

TRW SPACE TECHNOLOGY LABS REDONDO BEACH CALIF  
THE TRW TWO-STATION, ON-LINE SCIENTIFIC  
COMPUTER.

(U)

DESCRIPTIVE NOTE: ANNUAL PROGRESS REPT. (FINAL) FOR 14  
JUL 63-14 JUL 64,

DEC 64 326P CULLER,G. J. FRIED,B. D. I  
FIELD,E. C. POPE,D. I  
REPT. NO. STL-8687-6002-RU-000  
CONTRACT: AF3D 602 3097  
PROJ: 4594  
MONITOR: RADC , TDR64 393

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (COMPUTERS, DATA PROCESSING SYSTEMS),  
(DATA PROCESSING SYSTEMS, COMMAND AND CONTROL  
SYSTEMS), (COMMAND AND CONTROL SYSTEMS, DATA  
PROCESSING SYSTEMS), SCIENTIFIC RESEARCH, PLASMA  
OSCILLATIONS, EQUATIONS, MATHEMATICAL ANALYSIS,  
PROGRAMMING (COMPUTERS), CONTROL SEQUENCES, REAL TIME,  
INSTRUCTION MANUALS, SYSTEMS ENGINEERING (U)

THIS REPORT DESCRIBES THE RESEARCH AND DEVELOPMENT  
OF ON-LINE TECHNIQUES AND THEIR APPLICATION TO  
PROBLEM SOLVING. FOR CONVENIENCE, IT IS ORGANIZED  
IN SEVERAL PARTS. PART 1 LISTS THE PUBLISHED  
PAPERS DESCRIBING RESEARCH PROBLEMS SOLVED IN THE  
COURSE OF THIS EFFORT AND SUMMARIZES THE  
COMPUTATIONAL ASPECTS OF THE MULTI-DIMENSIONAL  
PROBLEM (A NONLINEAR DIFFUSION EQUATION) WHICH  
RECEIVED THE MOST ATTENTION. THE PHYSICAL  
SIGNIFICANCE OF THIS PROBLEM AND A DISCUSSION OF THE  
RESULTS OBTAINED IS GIVEN IN PART 5. PART 2  
CONTAINS A GENERAL DESCRIPTION OF THE ON-LINE SYSTEM  
FROM THE USER'S VIEWPOINT, INCLUDING SOME ELEMENTARY  
EXAMPLES OF THE 'CONSTRUCTIVE' ASPECTS OF ON-LINE  
COMPUTING. IN PART 3 WE HAVE COLLECTED THE ON-LINE  
PROBLEM SOLVING TECHNIQUES DEVELOPED IN THIS PROGRAM  
WHICH ARE OF GENERAL INTEREST. THESE INVOLVE A  
BLENDING OF NUMERICAL AND MATHEMATICAL ANALYSIS  
SOMWHAT DIFFERENT FROM THAT GENERALLY ENCOUNTERED IN  
CONVENTIONAL COMPUTING, BEING BEST CHARACTERIZED AS  
EMPHASIZING A GLOBAL RATHER THAN A LOCAL APPROACH TO  
PROBLEM FORMULATION AND SOLUTION. PART 4  
CONSTITUTES A COMPLETE USER'S MANUAL FOR THE PRESENT  
SYSTEM. IT GIVES A DETAILED DESCRIPTION OF EACH OF  
THE BASIC PROGRAMS. A GENERAL UNDERSTANDING OF THE  
ON-LINE SYSTEM CAN BE OBTAINED FROM PART 2; PARTS 3  
AND 4 PROVIDE THE DETAILED INFORMATION NEEDED TO (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-610 392

MITRE CORP BEDFORD MASS  
SYSTEM DESIGN AND ENGINEERING FOR REALTIME MILITARY  
DATA PROCESSING SYSTEMS, (U)  
JAN 66 72P ISRAELI, D. R. I  
REF ID: SR-124  
CONTRACT AF19 628 2390  
PROJ MIGL  
MONITOR ESD : TDR64 160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, AIR FORCE), (+DATA PROCESSING SYSTEMS, COMMAND AND CONTROL SYSTEMS), REAL TIME, FIRE CONTROL SYSTEMS, MILITARY REQUIREMENTS, SYSTEMS ENGINEERING, COMMUNICATION THEORY, COMPUTERS, DISPLAY SYSTEMS, PROGRAMMING (COMPUTERS), AIR FORCE OPERATIONS (U)  
IDENTIFIERS: SAGE, NORAD, AIR FORCE SYSTEM 416 (U)

THIS REPORT TREATS THE KEY PROBLEMS AND CONSIDERATIONS ARISING IN THE DESIGN, ENGINEERING, AND IMPLEMENTATION OF MILITARY SYSTEMS IN WHICH REAL-TIME DATA PROCESSING PLAYS A CENTRAL ROLE. THE PRINCIPAL DISTINGUISHING CHARACTERISTICS OF THESE COMMAND AND CONTROL SYSTEMS ARE SUMMARIZED.

ORGANIZATIONAL MATTERS RELATING TO RESPONSIBILITIES, OPERATIONAL INPUTS, AND PROCUREMENT ASPECTS ARE DESCRIBED IN THE CONTEXT OF THE OVER-ALL SYSTEM ACQUISITION PROCESS. INITIAL CONSIDERATIONS WHICH SHOULD GUIDE THE OVER-ALL DESIGN ARE DISCUSSED, INCLUDING SUCH OUTSTANDING DESIGN PROBLEMS AS THE PROPER MATCHING OF MAN/MACHINE CAPABILITIES AND THE PROVISION OF ADEQUATE CAPACITY AND FLEXIBILITY FOR CHANGE AND GROWTH. IMPORTANT ASPECTS OF HARDWARE, SOFTWARE, AND TESTWARE DESIGN ARE ALSO DETAILED.

(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 866  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARED COMPUTER OPERATIONS WITH BOTH  
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
OCT 64 49P KRISHNAOORTHI, B. INWOOD, ROGER  
C. I  
REPT. NO. SP-1848/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, OPERATIONS RESEARCH),  
(+SCHEDULING, COMPUTERS), (+QUEUEING THEORY,  
COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS, SYSTEMS  
ENGINEERING, MATHEMATICAL MODELS, MATHEMATICAL  
ANALYSIS, PROBABILITY, COMPUTER PERSONNEL,  
EFFECTIVENESS (U)  
IDENTIFIERS: TIME SHARING (COMPUTERS) (U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS  
BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING  
SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH  
INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL  
DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY  
THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV  
CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE  
INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE  
REGENERATION POINTS. IT IS SHOWN THAT USER  
CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE  
METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS  
DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS  
DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED  
FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE.  
FINALLY, A NUMBER OF NUMERICAL EXAMPLES ARE  
PRESENTED TO ILLUSTRATE THE EFFECT OF THE SYSTEM  
PARAMETERS UPON USER CONGESTION, SYSTEM RESPONSE  
TIME, AND COMPUTER EFFICIENCY. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-611 868

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
SIMULATION OF A TIME-SHARING SYSTEM.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

DEC 64 24P FINE, GERALD H. I

MCISAAC, PAUL V. I

REPT. NO. SP-1909

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: FOR PRESENTATION AT THE INSTITUTE OF  
MANAGEMENT SCIENCES MEETING (IMMS), SAN FRANCISCO,  
CALIF., 3-5 FEB 66.

DESCRIPTORS: (+COMPUTERS, OPERATIONS RESEARCH),  
(+SCHEDULING, SIMULATION), QUEUING THEORY, DIGITAL  
COMPUTERS, INPUT-OUTPUT DEVICES, REAL TIME,

(U)

OPTIMIZATION, MODELS (SIMULATIONS)  
IDENTIFIERS: TIME SHARING (COMPUTERS)

(O)

THE PAPER DESCRIBES THE USE OF SIMULATION  
TECHNIQUES IN THE ANALYSIS OF TIME-SHARE SYSTEM  
OPERATION. THE PURPOSE AND GOALS OF THIS RESEARCH  
EFFORT ARE BRIEFLY OUTLINED AND SOME COMMENTS ON THE  
ADVANTAGES AND DISADVANTAGES OF DIRECT SIMULATION FOR  
THIS TYPE OF WORK ARE GIVEN. THE EXISTING  
SIMULATOR MODELS ARE DESCRIBED IN TERMS OF INPUTS,  
GENERAL FLOW, AND OUTPUTS; AND THE RESULTS OF INITIAL  
INVESTIGATIONS WITH THESE MODELS ARE GIVEN. WORK  
CURRENTLY IN PROGRESS IS DISCUSSED, AND SOME RELATED  
PROBLEMS THAT MAY POSSIBLY BE STUDIED IN THE FUTURE  
BY SIMILAR METHODS ARE NOTED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 702  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
CTSS TECHNICAL NOTES. (U)  
MAR 65 84P SALTZER, J. H. I.  
REPT. NO. MAC-TR-16  
CONTRACT NO NR410201  
PROJ: DSR9457

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (\*PROGRAMMING (COMPUTERS), MULTIPLE OPERATION), (\*COMPUTERS, SYSTEMS ENGINEERING), REAL TIME, COMPUTER STORAGE DEVICES, INPUT-OUTPUT DEVICES

IDENTIFIERS: MAC PROJECT, IBM 7094, MULTI-ACCESS COMPUTERS, ON-LINE SYSTEMS, TIME SHARING (COMPUTERS), FAP (U)

THIS REPORT IS A TECHNICAL DESCRIPTION OF THE 7094 COMPATIBLE TIME SHARING SYSTEM IN USE AT PROJECT MAC AND THE M.I.T. COMPUTATION CENTER. IT IS DESIGNED TO ACQUAINT A SYSTEM PROGRAMMER WITH THE TECHNIQUES OF CONSTRUCTION WHICH WERE USED IN THIS PARTICULAR TIMESHARING SYSTEM. SEPARATE CHAPTERS DISCUSS THE OVERALL SUPERVISOR PROGRAM FLOW; CONSOLE MESSAGE INPUT AND OUTPUT; THE SCHEDULING AND STORAGE ALGORITHMS; AND A THUMBNAIL SKETCH IS GIVEN OF EACH OF THE SUBROUTINES WHICH MAKE UP THE SUPERVISOR PROGRAM. THIS REPORT WAS PREPARED WITH THE AID OF THE COMPATIBLE TIME-SHARING SYSTEM AND THE TYPSET AND RUNOFF COMMANDS.

(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 870

TRW COMPUTERS CO CANOGA PARK CALIF  
AIR TRAFFIC CONTROL STUDIES. TERMINAL AREA  
SEQUENCING AND CONTROL.

(U)

DESCRIPTIVE NOTE: REPT. NO. 10 (FINAL) 1 JAN 60-20  
FEB 41.

FEB 61 263P JACKSON, A. S. OTTOSON, M. I. I  
PARDEE, R. S. INALL, L. E. THOLLAND, F. C. I  
CONTRACT: FAA DRD112  
MONITOR: PU , 159 977

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJECT TASC.

DESCRIPTORS: (+AIR TRAFFIC CONTROL TERMINAL AREAS,  
SIMULATION), REAL TIME, FLIGHT SIMULATORS, COMPUTERS,  
DISPLAY SYSTEMS, APPROACH, LANDINGS, CONTROL  
SEQUENCES, HUMAN ENGINEERING, SYSTEMS ENGINEERING,  
ALL-WEATHER AVIATION, AVIATION SAFETY (U)

THE MAJOR AREAS OF COVERAGE ARE: (1) PHILOSOPHY  
AND AIMS OF REAL-TIME SIMULATION IN THE TERMINAL  
AREA, (2) EQUIPMENT AVAILABLE FOR REAL-TIME  
SIMULATION, (3) BRIEF DESCRIPTION OF THE SYSTEMS  
THAT HAVE BEEN SIMULATED, AND (4) RESULTS  
OBTAINED FROM REAL-TIME SIMULATION AND THEORETICAL  
STUDIES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 939

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
A DYNAMIC COMPUTER MODEL FOR SIMULATING MILITARY  
COMMAND SYSTEMS.  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
NOV 64 16P PAGE,LELAND F. I  
REPT. NO. SP-1066/000/00  
CONTRACT# 3D97

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, ARMED  
FORCES OPERATIONS), (+GAME THEORY, ARMED FORCES  
OPERATIONS), (+ARMED FORCES OPERATIONS, GAME THEORY),  
DYNAMICS, REAL TIME, DIGITAL COMPUTERS, MODELS  
(SIMULATIONS), MILITARY TACTICS, WEAPON SYSTEMS,  
NETWORKS

(U)

THIS PAPER DESCRIBES A COMPUTER-BASED, WAR-GAMING  
MODEL THAT OPERATES UNDER A TIME-SHARING SYSTEM ON A  
LARGE SCALE DIGITAL COMPUTER. THE MODEL SIMULATES  
A COMMAND SYSTEM COMPRISED OF A COMMAND POST AND A  
NETWORK OF SUBORDINATE WEAPON CONTROL CENTERS, WEAPON  
LAUNCH PLATFORMS, WEAPONS, SENSORS, AND THEIR  
INTERCONNECTING COMMUNICATION LINKS. ITS MAJOR  
PURPOSE IS TO SERVE AS A GENERAL SIMULATION TOOL THAT  
CAN BE READILY ADAPTED TO SIMULATE A VARIETY OF  
COMMAND SYSTEMS AND CONFLICT SITUATIONS. AS SUCH,  
IT CAN AID IN THE EVALUATION OF PERFORMANCE AND  
EFFECTIVENESS OF COMMAND-CONTROL SYSTEMS, OPERATING  
AS VULNERABLE NETWORKS IN DYNAMIC CONFLICT WITH A  
REACTIVE ENEMY.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-612 940

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARING SYSTEMS: REAL AND IDEAL.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

MAR 65 20P GALENSON, LOUIS I

WEISSMAN, CLARK I

REPT. NO. SP-1072

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, REAL TIME),  
(+PROGRAMMING (COMPUTERS), SCHEDULING), (+SCHEDULING,  
PROGRAMMING (COMPUTERS)), COMMAND AND CONTROL SYSTEMS,  
SYSTEMS ENGINEERING, DIGITAL COMPUTERS, REMOTE CONTROL  
SYSTEMS, COMPUTER STORAGE DEVICES; OPTIMIZATION,

(U)

MANAGEMENT ENGINEERING

IDENTIFIERS: AN/FSG-32, TIME SHARING,  
TELEGRAPH SYSTEMS, ELECTROSTATIC ACCELERATORS

(U)

TO AID IN FUTURE DESIGN FOR LARGE-SCALE, GENERAL-PURPOSE, COMPUTER TIME-SHARING SYSTEMS, AN APPRAISAL OF THE EXISTING SOC TIME-SHARING SYSTEM (TSS) SHOWS THAT IMPROVEMENTS FOR INCREASED USER SATISFACTION MAY BE MADE IN CONTINUITY OF SYSTEM OPERATION, RESPONSIVENESS OF THE SYSTEM TO INTERROGATION, AND ACCESSIBILITY TO USERS' PROGRAMMING THROUGH MANY DIFFERENT LANGUAGES AND AT INPUT-OUTPUT CONSOLES LOCATED REMOTE FROM THE COMPUTER. CONTINUITY OF OPERATION DEPENDS UPON RELIABLE EQUIPMENT, PARTICULARLY PERIPHERAL INPUT-OUTPUT DEVICES, AND UPON A RELIABLE TSS EXECUTIVE PROGRAM, 10% OF WHICH IS DEVOTED TO RESPONDING TO A WIDE VARIETY OF HARDWARE, PROGRAM, AND USER'S ERRORS. THOUGH THE MEAN-TIME-TO-FAILURE OF THE SYSTEM IS IMPORTANT, THE MEAN-TIME-TO-DISCONTINUITY (SHORT PERIODS OF LESS THAN A MINUTE WHEN THE SYSTEM STOPS OPERATING) IS ALSO OF SERIOUS IMPORT. ABOUT 75% OF THE TSS EXECUTIVE AND ABOUT 25% OF THE EXECUTIVE OPERATE TIME IS DEVOTED TO THE SCHEDULING OF USER'S PROGRAMS, SO THAT SYSTEM RESPONSIVENESS, CALLED THE "RESPONSE CYCLE," IS WITHIN 2 SECONDS OF A USER'S QUERY. THE TSS RESPONSE CYCLE IS DEPENDENT UPON MANY THINGS; PARTICULARLY, HOW MUCH OPERATE TIME, CALLED A QUANTUM, IS GIVEN TO EACH USER AND HOW MUCH TIME IS SPENT SWAPPING PROGRAMS BETWEEN DRUMS AND CORE FOR EACH USER.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 271

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
SDC PERSONNEL DATA RETRIEVAL TIMESHARING SYSTEM. (U)

MAR 65 SP

REPT. NO. SP-2008

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (1)PERSONNEL, DATA PROCESSING SYSTEMS),  
(2)DATA PROCESSING SYSTEMS, PERSONNEL), PROGRAMMING  
(COMPUTERS), PERSONNEL MANAGEMENT, INFORMATION  
RETRIEVAL, TELETYPE SYSTEMS, DATA

(U)

IDENTIFIERS: ECCO PROGRAM, AN/FSQ-32, TIME SHARING  
(COMPUTERS)

(U)

THE PERSONNEL DATA RETRIEVAL TIME-SHARING  
SYSTEM, USING THE ECCO PROGRAM, OPERATES UNDER  
THE AN/FSQ-32 TIME-SHARING SYSTEM TO PROVIDE  
AN ON-LINE INQUIRY CAPABILITY FOR SEARCHING PERSONNEL  
DATA FILES AND OUTPUTTING THE REQUIRED INFORMATION.  
THE INQUIRY CAPABILITY IS PROVIDED BY AN ON-LINE  
MODEL 28 OR MODEL 33 TELETYPE SEND-RECEIVE SET.  
THIS EQUIPMENT ALLOWS THE INQUIRER TO INSERT THE  
COMMANDS, CONTROL INFORMATION, AND SEARCH PARAMETERS  
REQUIRED FOR THE DATA RETRIEVAL. THE SYSTEM  
PROVIDES THREE BASIC CAPABILITIES FOR PROCESSING  
PERSONNEL INFORMATION ITEMS CONTAINED IN THE DATA  
BASE. THESE ARE: (1) A GENERALIZED SEARCH  
CAPABILITY WHEREBY INDIVIDUALS WITH VARIOUS  
BACKGROUNDS AND CHARACTERISTICS MAY BE IDENTIFIED  
FROM THE DATA BASE. (2) A LIST CAPABILITY IS  
PROVIDED WHICH ALLOWS THE OPERATOR TO SPECIFY A  
PRINT-OUT OF ANY OF THE INFORMATION CONTAINED IN EACH  
INDIVIDUAL'S RECORD IN A VARIETY OF FORMATS. (3)  
A CAPABILITY IS PROVIDED TO PERFORM TWO STATISTICAL  
OPERATIONS ON ANY QUANTIFIED ITEMS OF INFORMATION IN  
THE DATA BASE. THE TWO STATISTICAL ROUTINES ARE  
THE ARITHMETIC MEAN AND THE RANGE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-613 630

RAND CORP SANTA MONICA CALIF  
A WORKING DEFINITION OF REAL-TIME CONTROL, (U)  
MAR 65 26P NELSON, EDWARD A., I  
REPT. NO. P-3089

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+MANAGEMENT CONTROL SYSTEMS, REAL TIME), (+REAL TIME, MANAGEMENT CONTROL SYSTEMS), MANAGEMENT ENGINEERING, COMPUTERS, CONTROL SEQUENCES, FACTOR ANALYSIS, DECISION MAKING, CONTROL (U)

CONTROL IS THE PROCESS OF ASSURING THE CONFIRMITY OF PLANS AND EVENTS. REAL-TIME CONTROL REQUIRES THAT THE RESPONSE OF EACH ELEMENT OF THE CONTROL SYSTEM IS SUCH THAT THE COMBINED EFFECT OF ALL ELEMENTS PRODUCES RESULTS THAT ARE SUFFICIENTLY EXPEDIENT TO PRECLUDE FAILURE OF THE SYSTEM. A REAL-TIME CONTROL SYSTEM IS CONCERNED WITH A FLOW PROCESS THROUGH TIME. IT THUS ARISES OUT OF, AND IS INTIMATELY CONNECTED WITH THE CONCEPTS OF DISTRIBUTION LOGISTICS. THE PROPER FUNCTIONING OF A REALTIME CONTROL SYSTEM REQUIRES THE USE OF EVERY ONE OF ITS ELEMENTS, AND ANY ONE ELEMENT MAY BECOME THE CRITICAL FACTOR. IT IS NOT NECESSARILY THE ELEMENTS THEMSELVES, BUT RATHER THE PRECISE INTERRELATIONSHIP OF THESE ELEMENTS, WITH TIME, THAT MAKES A CONTROL SYSTEM A REAL-TIME CONTROL SYSTEM. PROGRESS IN THE DEVELOPMENT OF REAL-TIME SYSTEMS THEREFORE INVOLVES ATTENTION TO EVERY ELEMENT AND ITS RELATION TO THE OTHERS. THE ELEMENTS OF A REALTIME SYSTEM ARE: FORECASTING, COMMUNICATION, DECISION, CONTROL MECHANISM, AND CRITERIA. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 840

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
THE TINT USERS' GUIDE.

(U)

MAR 68 161P KENNEDY, PHYLLIS R. I  
REPT. NO. TM-1933/000/02  
CONTRACT# SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PROGRAMMING (COMPUTERS), INSTRUCTION  
MANUALS), (+COMPILERS, CONTROL SEQUENCES),  
(+PROGRAMMING LANGUAGES, COMPILERS), (+TELETYPE  
SYSTEMS, PROGRAMMING (COMPUTERS)), DATA PROCESSING  
SYSTEMS, REAL TIME, COMMAND AND CONTROL SYSTEMS,  
DIGITAL COMPUTERS

(U)

IDENTIFIERS: TIME SHARING (COMPUTERS), JOVIAL,  
TINT

(U)

A USERS' GUIDE THAT INSTRUCTS THE PROSPECTIVE  
TIMESHARING USER ON HOW TO USE TINT, THE ON-  
LINE TELETYPE JOVIAL INTERPRETER. THIS GUIDE  
PRESENT A BRIEF INTRODUCTION TO THE TIME-SHARING  
SYSTEM, A COMPLETE DESCRIPTION OF THE TINT  
COMMANDS, A COMPLETE DESCRIPTION OF THE DIALECT OF  
THE JOVIAL LANGUAGE WHICH TINT INTERPRETS, AND  
THE TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING  
TINT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-614 992

RAND CORP SANTA MONICA CALIF

JOSS: EXAMPLES OF THE USE OF AN EXPERIMENTAL ON-LINE  
COMPUTING SERVICE.

APR 65 IIP SHAW, J. C. I

REPT. NO. P-3131

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LIMITED NUMBER OF COPIES CONTAINING COLOR OTHER THAN BLACK AND WHITE ARE AVAILABLE UNTIL STOCK IS EXHAUSTED. REPRODUCTIONS WILL BE MADE IN BLACK AND WHITE ONLY. PRESENTED AT THE SIXTH ANNUAL SYMPOSIUM OF THE PROFESSIONAL GROUP ON HUMAN FACTORS IN ELECTRONICS, THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS, BOSTON, MAY 6-8, 1965.

DESCRIPTORS: (SPECIAL PURPOSE COMPUTERS, NUMERICAL METHODS AND PROCEDURES), (NUMERICAL METHODS AND PROCEDURES, SPECIAL PURPOSE COMPUTERS), (DATA PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS), NUMBERS, NUMERICAL ANALYSIS, PROGRAMMING LANGUAGES, INPUT-OUTPUT DEVICES

(U)

IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP SYSTEM), ON-LINE SYSTEMS, TIME SHARING (COMPUTERS)

(U)

CONTENTS (SINCE JOSS IGNORES INPUT LINES BEGINNING WITH AN ASTERISK, THE DEVICE IS USED TO INTERPOSE COMMENTS IN THE EXAMPLES; ON THE ORIGINAL COPY, OUTPUT IS IN BLACK AND INPUT IN GREEN): ELEMENTS OF THE LANGUAGE STORED PROGRAM FOR COMPUTING THE HYOTENUSE INTEGRATION OF 1/X BY GAUSS 2-POINT RULE ROOT FINDING MATRIX INVERSION WITH SIMPLE PIVOTING ON THE DIAGONAL AN ASTERISK AT THE END CAN KILL THE LINE PRODUCTION OF A FORMATTED TABLE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 604  
RAND CORP SANTA MONICA CALIF  
JOSS: CONVERSATIONS WITH THE JOHNNIAC OPENSHOP  
SYSTEM,  
MAY 65 6P SHAW, J. C. I (U)  
REPT. NO. P-3146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE INTERNATIONAL FEDERATION FOR INFORMATION PROCESSING CONGRESS, NEW YORK, N. Y., 24-29 MAY 65. SEE ALSO AD-603 972, AD-614 992.

DESCRIPTORS: (SPECIAL PURPOSE COMPUTERS, NUMERICAL METHODS AND PROCEDURES), (NUMERICAL METHODS AND PROCEDURES, SPECIAL PURPOSE COMPUTERS), (DATA PROCESSING SYSTEMS, SPECIAL PURPOSE COMPUTERS), (NUMERICAL ANALYSIS, PROGRAMMING (COMPUTERS)), (PROGRAMMING LANGUAGES) (U)

IDENTIFIERS: ON-LINE SYSTEMS, JOSS (JOHNNIAC OPENSHOP SYSTEM), TIME SHARING (COMPUTERS) (U)

THE JOHNNIAC OPEN-SHOP SYSTEM (JOSS) IS AN EXPERIMENTAL SYSTEM DESIGNED TO DEMONSTRATE BENEFITS OF ON-LINE INTERACTION WITH A COMPUTER, PARTICULARLY A COMPUTER LIMITED TO SMALL NUMERICAL COMPUTATIONS SUCH AS THE JOHNNIAC. EXAMPLES ARE GIVEN OF CONVERSATION WITH THE COMPUTING SYSTEM WHEREBY COMPUTING REQUIREMENTS ARE MET THAT ARE NOT WELL SATISFIED BY CONVENTIONAL SERVICES. THE FIRST EXAMPLE IS OF THE PRODUCTION OF A TABLE WITH THE CONVERSATION DIRECTING JOSS TO MODIFY THE PROGRAM TO SPECIFY PYTHAGOREAN TRIPLES. JOSS STORES NUMERICAL VALUES, FORMS, AND STEPS THAT BEGIN WITH NUMERICAL LABELS. THE SECOND EXAMPLE IS OF THE ASSISTANCE JOSS GIVES BY EXTENSIVE CHECKING OF THE USER'S INSTRUCTIONS. JOSS COMMENTS FROM A STOCK OF 40 'CANNED' MESSAGES (HOSTLY ERROR MESSAGES), FREQUENTLY ALLOWING THE USER TO REPAIR AN ERROR ON THE SPOT AND DIRECT JOSS TO CONTINUE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 650

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB  
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL  
SYSTEM, (U)

FEB 68 42P NOLAN, J. F.; TARMENTIS, A. W. I  
REPTS. NO. TR-377  
CONTRACT: AF19 620 800 ,NONR410201  
MONITOR ESD , TDR-68-36

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTIONS: (PROGRAMMING (COMPUTERS), DATA STORAGE  
SYSTEMS), (DATA STORAGE SYSTEMS, PROGRAMMING  
(COMPUTERS)), INFORMATION RETRIEVAL, COMPUTER LOGIC,  
DATA TRANSMISSION SYSTEMS, COMPUTERS, MULTIPLE  
OPERATION (U)

IDENTIFIERS: LIST PROCESSING, MAC PROJECT, ON-LINE  
SYSTEMS, COMPUTER WORDS, TIME SHARING (COMPUTERS) (U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM  
SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE  
STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON  
COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE  
USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO  
NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE,  
MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS  
PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM  
WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE  
TIMESHARING SYSTEM (CTSS) FACILITIES OF  
PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 731

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS  
FOR STATE AND LOCAL GOVERNMENT, (U)

MAY 68 34P KIBBEE, JOEL M. I  
REPT. NO. SP-2073

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (♦DATA PROCESSING SYSTEMS, MANAGEMENT  
ENGINEERING), (♦COMPUTERS, MANAGEMENT ENGINEERING),  
PROGRAMMING (COMPUTERS), REAL TIME, PROGRAMMING  
LANGUAGES, INPUT-OUTPUT DEVICES (U)

IDENTIFIERS: TIME SHARING (COMPUTERS), ON-LINE  
SYSTEMS, INFORMATION SYSTEMS, LOCAL GOVERNMENTS (U)

THE PAPER INTRODUCES TO THE PUBLIC MANAGER THE  
FUNDAMENTALS OF INFORMATION PROCESSING AND COMPUTERS.  
TO UNDERSTAND COMPUTERS, IT IS NECESSARY TO  
DISTINGUISH BETWEEN 'HARDWARE' AND 'SOFTWARE.'  
HARDWARE IS THE PHYSICAL PIECE OF EQUIPMENT.  
SOFTWARE IS EVERYTHING ELSE--PROGRAMS AND  
PROCEDURES--NEEDED BY PEOPLE TO MAKE COMPUTERS  
USEFUL. A COMPUTER SHOULD NOT BE THOUGHT OF AS  
SOMETHING WHICH EXISTS INDEPENDENTLY OF SOFTWARE.  
THIS PAPER DEALS FIRST WITH THE INFORMATION SYSTEM--  
A COLLECTION OF MEN, MACHINES, AND SOFTWARE, WITH  
EACH ASSIGNED THAT TASK WHICH EACH DOES BEST--AND  
THEN DISCUSSES HARDWARE AND DATA COMMUNICATIONS.  
SOFTWARE, MORE IMPORTANT THAN HARDWARE, AND EQUALLY  
COSTLY, IS TREATED WITH PRIMARILY EMPHASIS ON  
PROGRAMMER AND USER LANGUAGES. TIME-SHARING,  
SOFTWARE-SHARING, AND INFORMATION-SHARING ARE  
COVERED, AS WELL AS THE CONCEPTS OF A UNIFIED  
INFORMATION SYSTEM AND A COORDINATED INFORMATION  
SYSTEM. THE PAPER CONCLUDES WITH A SUGGESTION THAT  
STATE AND LOCAL GOVERNMENT MIGHT, THROUGH JOINT  
DEVELOPMENT, DECREASE THE COST OF SOFTWARE FOR EACH  
OF THEM. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-615 943

RAND CORP SANTA MONICA CALIF  
JOSS: EXPERIENCE WITH AN EXPERIMENTAL COMPUTING  
SERVICE FOR USERS AT REMOTE TYPEWRITER CONSOLES. (U)

MAY 65 19P SHAW, J. C. I

REPT. NO. P-3149

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+SPECIAL PURPOSE COMPUTERS, DATA  
PROCESSING SYSTEMS), (+DATA PROCESSING SYSTEMS,  
INPUT-OUTPUT DEVICES), TYPEWRITERS, TRAINING,  
PROGRAMMING LANGUAGES, COMMUNICATION SYSTEMS,  
COMPUTER STORAGE DEVICES (U)

IDENTIFIERS: JOSS (JOHNNIAC OPEN-SHOP  
SYSTEM), MAN-MACHINE SYSTEMS, TIME  
SHARING (COMPUTERS) (U)

DESCRIPTIONS ARE GIVEN OF THE PHILOSOPHY OF THE  
JOSS SYSTEM, ITS HARDWARE AND SOFTWARE, AND  
EXPERIENCE WITH ITS USE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AU-616 931

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
A USER-ORIENTED PRIORITY SCHEME FOR A TIME-SHARING  
SYSTEM,

(U)

JUN 65 JSP TOTSCHER, ROBERT A. I

REPT. NO. SP-2111  
CONTRACT: SD-97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PROGRAMMING(COMPUTERS),  
SCHEDULING), (\*COMPUTERS, SCHEDULING),

AUTOMATIC

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE  
SYSTEMS

(U)

TIME-SHARING SYSTEMS HAVE YIELDED LARGE PAYOFFS IN COMPUTER PROGRAM PRODUCTION BY PROVIDING FAST TURNAROUND AND INTERACTIVE DEBUGGING. CORPORATIONS OR INSTITUTES THAT INSTALL TIME-SHARING SYSTEMS WILL FIND THAT THEIR SYSTEMS WILL SOON BE SATURATED WITH USERS. UNTIL THE SYSTEM CAPACITY IS EXPANDED, BY MEANS OF HARDWARE OR SOFTWARE CHANGES, IT MAY BE DESIRABLE TO IMPLEMENT A PRIORITY SYSTEM THAT WILL FACILITATE WORK ON CRITICAL PROJECTS AND INSURE THE MEETING OF DEADLINES. THIS PAPER DISCUSSES THE CRITERIA FOR A TIME-SHARING PRIORITY SCHEME AND PRESENTS SOME TECHNIQUES FOR SUPERIMPOSING A PRIORITY SCHEME UPON A TYPICAL TIMESHARING CONFIGURATION. THE SCHEME HAS THREE PRIMARY PRIORITIES: HIGH, LOW, AND NO. USERS ARE ALLOCATED BUDGETS OF HIGH AND LOW PRIORITY TIME FOR THE SUCCEEDING MONTH BASED UPON THEIR CURRENT FORECAST AND PREVIOUS USAGE. ALL USERS ARE GIVEN UNLIMITED NO PRIORITY TIME. THE SALIENT FEATURE OF THE SCHEME IS THAT THE USERS DETERMINE WHEN AND AT WHICH PRIORITY THEY WILL OPERATE. SOME EXAMPLES OF THE BUDGET ALLOCATION PROCESS ARE INCLUDED. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 001

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
INTERARRIVAL STATISTICS FOR TSS.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

AUG 65 INP COFFMAN,E. G.,JR.,WOOD,R.

C. I

REPT. NO. SP-2161

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING(COMPUTERS)),  
(SCHEDULING, COMPUTERS),  
OPTIMIZATION, STATISTICAL FUNCTIONS, STOCHASTIC  
PROCESSES, QUEUING THEORY

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS)

(U)

THE OPTIMIZATION OF TIME-SHARED SYSTEM PERFORMANCE  
REQUIRES THE DESCRIPTION OF THE STOCHASTIC PROCESSES  
GOVERNING THE USER INPUTS AND THE PROGRAM ACTIVITY.  
THIS PAPER PROVIDES A STATISTICAL DESCRIPTION OF  
THE USER INPUT PROCESS IN THE SDC-ARPA GENERAL-PURPOSE  
TIME-SHARING SYSTEM (TSS). THE INPUT  
PROCESS IS ASSUMED TO BE STATIONARY, AND TO BE  
DEFINED BY THE INTERARRIVAL TIME DISTRIBUTION. THE  
DATA OBTAINED APPEAR TO JUSTIFY SATISFACTORILY THE  
COMMON ASSUMPTION THAT THE INTERARRIVAL TIMES ARE  
SERIALLY INDEPENDENT. THE DATA DO NOT APPEAR TO  
JUSTIFY, EXCEPT AS A VERY ROUGH APPROXIMATION, THE  
USUAL ASSUMPTION OF AN EXPONENTIAL DISTRIBUTION FOR  
INTERARRIVAL TIME. A MUCH MORE SATISFACTORY  
APPROXIMATION TO THE DATA CAN BE OBTAINED WITH A  
BIPHASE OR TRIPHASE HYPEREXPONENTIAL DISTRIBUTION.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 003

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
AN EMPIRICAL INVESTIGATION INTO THE BEHAVIOR OF THE  
SDC TIME-SHARING SYSTEM. (U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

AUG 65 78P TOTSCHER,ROBERT A. I  
REPT. NO. SP-2191/000/00  
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, SCHEDULING), COMPUTER  
LOGIC, EFFECTIVENESS, MULTIPLE OPERATION, REAL  
TIME, INPUT-OUTPUT DEVICES, OPTIMIZATION,  
OPERATIONS RESEARCH (U)

IDENTIFIERS: TIME SHARING(COMPUTERS), AN/FSQ-  
32 (U)

THE BEHAVIOR OF A COMPUTER TIME-SHARING SYSTEM IS  
INTRINSICALLY COMPLEX BECAUSE SUCH A SYSTEM EFFECTS A  
COMPROMISE BETWEEN ALLOWING JOBS TO RUN TO COMPLETION  
AND ALLOWING ITS SEVERAL USERS SIMULTANEOUS COMPLETE  
AND IMMEDIATE ACCESS TO OPERATE AND DEBUG THEIR  
PROGRAMS. IT IS GENERALLY KNOWN THAT COMPUTER  
SYSTEMS THAT ALLOW JOBS TO RUN TO COMPLETION TEND TO  
MAXIMIZE SYSTEM EFFICIENCY; COMPUTER SYSTEMS THAT  
OFFER THE INDIVIDUAL THE MOST IMMEDIATE POSSIBLE  
RESPONSE TEND TO MAXIMIZE THEIR UTILITY TO THE USER.  
IT IS ALSO KNOWN THAT THE RELATIVELY SLOW SPEEDS OF  
THE I/O DEVICES THAT BUFFER INDIVIDUALS FROM  
COMPUTERS (AND VICE VERSA) PERMIT THE TIME-  
SHARING SYSTEMS TO SERVICE SEVERAL USERS AT A  
REASONABLE COST PER USER. THE REPORT ATTEMPTS TO  
MAKE MORE PRECISE STATEMENTS ABOUT THE BEHAVIOR OF  
THE SDC TIME-SHARING SYSTEM, USING DATA OBTAINED  
FROM 13 ONE-HOUR RECORDINGS. THESE DATA INCLUDE  
DISTRIBUTIONS OF SERVICE AND INTERARRIVAL TIMES,  
NUMBER OF USERS, AND OVERHEAD TIMES. IN ADDITION,  
TWO SCHEDULING LOGICS ARE COMPARED. SEVERAL  
MEASURES OF EFFECTIVENESS, FROM BOTH A SYSTEM AND AN  
INDIVIDUAL VIEWPOINT ARE INTRODUCED AND EVALUATED  
USING THESE DATA. SOME ANALYSES HAVE ALSO BEEN  
(AUTHOR) INCLUDED TO PREDICT THE EFFECTS OF SYSTEM CHANGES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AD0396

AD-622 012

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
THE STATIONARY BEHAVIOR OF A TIME-SHARING SYSTEM  
UNDER POISSON ASSUMPTIONS.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,

SEP 65 29P KRISHNAOORTHI, B. S

REPT. NO. SP-2090/000/00

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE AD-622 016.

DESCRIPTORS: (\*COMPUTERS, OPERATIONS RESEARCH),  
(\*SCHEDULING, COMPUTERS), (\*QUEUEING THEORY,  
COMPUTERS), STATISTICAL PROCESSES, PROBABILITY,  
TIME, MATHEMATICAL ANALYSIS

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS)

(U)

IN A RECENT PAPER (AD-611 866), THE AUTHOR  
ANALYZED A MARKOV CHAIN IMBEDDED IN THE STOCHASTIC  
PROCESS  $\{X(t)\}_{t \geq 0}$  WHERE  $X(t)$   
DENOTES THE NUMBER OF ACTIVE CHANNELS AT TIME T IN A  
TIME-SHARING SYSTEM WITH BOTH INTERARRIVAL AND  
SERVICE TIMES EXPONENTIAL AND A FINITE NUMBER OF  
USERS. IN THIS PAPER, BY USING RENEWALTHEORETIC  
ARRANGEMENTS, THE LIMITING DISTRIBUTION OF  $X(t)$   
IS OBTAINED AS T GOES TO INFINITY OVER ALL TIME  
POINTS. THE EQUILIBRIUM WAITING TIME HAS ALSO BEEN  
ANALYZED. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 013

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
OBSERVATIONS ON TIME-SHARED SYSTEMS,  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER, (U)  
SEP 65 28P SCHWARTZ, JULES I.  
REPT. NO. SP-2046  
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE NATIONAL ACM  
CONFERENCE (20TH), CLEVELAND, OHIO, 24-6 AUG 65.

DESCRIPTORS: (\*COMPUTERS, SCHEDULING), (\*DATA  
PROCESSING SYSTEMS, SCHEDULING), (\*SCHEDULING,  
COMPUTERS), TIME, OPERATION  
IDENTIFIERS: ON-LINE SYSTEMS, TIME  
SHARING(COMPUTERS) (U)

THE PAPER DISCUSSES VARIOUS CONSIDERATIONS FOUND  
NECESSARY WHEN PLANNING AN ON-LINE TIME-SHARED  
INSTALLATION, PARTICULARLY FROM THE POINT OF VIEW OF  
USERS OF SUCH SYSTEMS. BASED MAINLY ON EXPERIENCE  
WITH THE TIME-SHARING SYSTEM AT THE SYSTEM  
DEVELOPMENT CORPORATION, ACTUAL SITUATIONS ARE  
DESCRIBED IN ORDER TO SHOW WHERE PROBLEMS EXIST, AND  
HOW ADVANTAGES OF SUCH SYSTEMS MAY BE ACCRUED.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 016

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARED COMPUTER OPERATIONS WITH BOTH  
INTERARRIVAL AND SERVICE TIMES EXPONENTIAL.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
SEP 65 SIP KRISHNAMOORTHI, B. S.  
WOOD, ROGER C. I  
REPT. NO. SP-1048/000/01  
CONTRACT: SD97  
MONITOR: AD 611 866 SUPERSED ED

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, OPERATIONS RESEARCH),  
(+SCHEDULING, COMPUTERS), (+QUEUING THEORY,  
COMPUTERS), REAL TIME, STATISTICAL FUNCTIONS,  
SYSTEMS ENGINEERING, MATHEMATICAL MODELS,  
MATHEMATICAL ANALYSIS, PROBABILITY, COMPUTER  
PERSONNEL, EFFECTIVENESS

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS)

(U)

THE CONCEPT OF TIME-SHARED COMPUTER OPERATIONS IS  
BRIEFLY DESCRIBED AND A MODEL OF A TIME-SHARING  
SYSTEM IS PROPOSED, BASED ON THE ASSUMPTION THAT BOTH  
INTERARRIVAL AND SERVICE TIMES POSSESS AN EXPONENTIAL  
DISTRIBUTION. ALTHOUGH THE PROCESS DESCRIBED BY  
THIS MODEL IS NON-MARKOVIAN, AN IMBEDDED MARKOV  
CHAIN IS ANALYZED BY EXPLOITING THE FACT THAT THE  
INSTANTS OF COMPLETION OF A 'QUANTUM' OF SERVICE ARE  
REGENERATION POINTS. IT IS SHOWN THAT USER  
CONGESTION POSSESSES A LIMITING DISTRIBUTION, AND THE  
METHOD OF GENERATING FUNCTIONS IS USED TO DERIVE THIS  
DISTRIBUTION. THE CONCEPT OF CYCLE TIME IS  
DISCUSSED AND TWO MEASURES OF CYCLE TIME DEVELOPED  
FOR A SCHEDULING DISCIPLINE EMPLOYING A SINGLE QUEUE.  
A NUMBER OF NUMERICAL EXAMPLES ARE PRESENTED TO  
ILLUSTRATE THE EFFECT OF THE SYSTEM PARAMETERS UPON  
USER CONGESTION, SYSTEM RESPONSE TIME, AND COMPUTER  
EFFICIENCY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 018

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
LISP 1.5 REFERENCE MANUAL FOR Q-32.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.

AUG 65 B6P KAMENY,S. L.

REPT. NO. TM-2337/101/00

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*PROGRAMMING LANGUAGES, INSTRUCTION  
MANUALS), (\*COMPUTERS, SCHEDULING), COMPILERS,  
COMPUTER STORAGE DEVICES

(U)

IDENTIFIERS: AN/FSQ-32, LISP, TIME  
SHARING(COMPUTERS), PUSHDOWN STORAGE

(U)

THE DOCUMENT IS A REFERENCE MANUAL FOR THE Q-32  
LISP SYSTEM IN OPERATION UNDER THE TIME-SHARING  
SYSTEM (TSS) ON THE AN/FSQ-32 COMPUTER. IT  
DESCRIBES THE WORKING OF THE LISP SYSTEM, AND  
CONTAINS DESCRIPTIONS OF ALL CURRENTLY AVAILABLE AND  
INSTALLED FUNCTIONS, EXCEPT FOR INPUT-OUTPUT AND  
LIBRARY FUNCTIONS GIVEN IN TM-2337/102/00 (AD-622  
022). THIS DOCUMENT CONFORMS TO THE CURRENT  
NUMBERING ON LISP 1.5 DOCUMENTS, AND SUPERSEDES  
TM-2430/000/00, WHICH WAS A DRAFT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 020

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TRACE MODEL I. TIMESHARED ROUTINES FOR ANALYSIS,  
CLASSIFICATION AND EVALUATION.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.,

SEP 65 SEP MOORE, WILLIAM H., JR.;  
MEEKER, ROBERT J.; ISHURE, GERALD H.;  
REPT. NO. TH-2621  
CONTRACT: SD286

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING(COMPILERS),  
SCHEDULING); (COMPUTERS, SCHEDULING); DATA,  
ANALYSIS, CLASSIFICATION, TELETYPE SYSTEMS,  
FEEDBACK, OPTIMIZATION

(U)

IDENTIFIERS: AN/FSQ-32, TIME  
SHARING(COMPUTERS), ON-LINE SYSTEMS, JOVIAL,  
EVALUATION

(U)

THE DOCUMENT PRESENTS A USER'S AND PROGRAMMER'S  
DESCRIPTION OF THE TRACE PROGRAM, WHICH PROVIDES  
THE USER WITH AN ON-LINE TECHNIQUE FOR SCANNING DATA  
AND DERIVING VARIABLES. THE TECHNIQUE ASSISTS IN  
CREATING AND EVALUATING OPTIMAL INDICES FOR  
EXHIBITING RELATIONS AMONG EMPIRICAL DATA. TRACE  
IS WRITTEN IN THE TIMESHARING SYSTEM VERSION OF THE  
JOVIAL LANGUAGE (JTS) FOR THE AN/FSQ-32  
COMPUTER AT SDC. THE ON-LINE CAPABILITY OF THE  
PROGRAM PERMITS IMMEDIATE FEEDBACK TO THE USER ABOUT  
THE RELATIVE UTILITY OF DERIVED INDICES AND PERMITS  
ADOPTION OR MODIFICATION OF THESE FOR FURTHER  
ANALYSES. THE TIME-SHARING CAPABILITY OF THE  
PROGRAM PERMITS EFFICIENT USE OF THE COMPUTER IN THIS  
PROCESS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-622 021

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
THE TINT USERS' GUIDE.

(U)

DESCRIPTIVE NOTE: TECHNICAL MEMO.

JUL 65 182P KENNEDY, PHYLLIS R. I

REPT. NO. TM-1933-000-01

CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*COMPUTERS, INSTRUCTION MANUALS),  
(\*SCHEDULING, COMPUTERS), TELETYPE SYSTEMS,  
COMPILERS, REAL TIME, MULTIPLE OPERATION,  
PROGRAMMING(COMPUTERS), COMPUTER PERSONNEL,  
COMPUTER OPERATORS

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS), JOVIAL,  
TINT, ON-LINE SYSTEMS

(U)

THE USERS' GUIDE INSTRUCTS THE PROSPECTIVE  
TIMESHARING USER ON HOW TO USE TINT, THE ON-  
LINE TELETYPE JOVIAL INTERPRETER. THE GUIDE  
PRESENTS A BRIEF INTRODUCTION TO THE TIME-SHARING  
SYSTEM, A COMPLETE DESCRIPTION OF THE DIALECT OF  
THE JOVIAL LANGUAGE THAT TINT INTERPRETS, AND THE  
TSS COMMANDS THAT ARE REQUIRED WHEN OPERATING  
TINT. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-622 022

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
INPUT-OUTPUT FILE AND LIBRARY FUNCTIONS, THE Q-32  
LISP 1.5 MOD. 2.5 SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL MEMO,  
SEP. 65 16P KAHENY, S. L. I  
REF ID: TH-2337-102-00  
CONTRACT: SD97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING LANGUAGES, INSTRUCTION  
MANUALS), (COMPUTERS, SCHEDULING), COMPILERS,  
INPUT-OUTPUT DEVICES, COMPUTER STORAGE DEVICES,  
MAGNETIC TAPE (U)

IDENTIFIERS: LISP, AN/FSG-32, TIME  
SHARING(COMPUTERS) (U)

THIS DOCUMENT SUPPLEMENTS TH-2337-101-00 (AD-  
622 018) BY DESCRIBING THE INPUT-OUTPUT, FILE-  
HANDLING AND LIBRARY FUNCTIONS OF Q-32 LISP 1.5  
MOD. 2.5. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-623 738 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
ADVANCED COMPUTER TECHNIQUES APPLICABLE TO SPACE AND  
RANGE PROBLEMS, (U)  
OCT 65 17P WEST, GERALD D. I  
REPT. NO. SP-2197

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: {COMPUTERS, OPERATION}, SPACE  
FLIGHT, RANGES, PROGRAMMING LANGUAGES,  
PROGRAMMING(COMPUTERS), STANDARDIZATION,  
MULTIPLE OPERATION, EFFECTIVENESS  
IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

COMPUTER INSTALLATIONS SERVING RANGE AND SPACE  
NEEDS ARE CHARACTERIZED BY A LARGE NUMBER OF USER  
ORGANIZATIONS, A VARIETY OF PROCESSING TASKS, AND  
RAPID GROWTH. THESE CHARACTERISTICS TEND TO RESULT  
IN PROBLEMS IN COMPUTER UTILIZATION. CERTAIN  
ADVANCED PROGRAMMING CONCEPTS SUCH AS TIME-SHARING  
AND MULTI-PROCESSING SEEM TO PROVIDE THE MEANS FOR  
ALLEVIATING THE COMPUTER UTILIZATION PROBLEMS BEING  
EXPERIENCED BY RANGE AND SPACE SUPPORT INSTALLATIONS.  
THESE CONCEPTS ARE A PART OF THE METHODOLOGY OF THE  
COMPUTER APPLICATIONS FIELD, AND ARE DISTINCT FROM  
THE FUNCTIONAL REQUIREMENTS OF THE COMPUTER USER.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-623 796 9/2

LINCOLN LAB MASS INST OF TECH LEXINGTON  
AN EXPERIMENTAL ON-LINE DATA STORAGE AND RETRIEVAL  
SYSTEM. (U)

DESCRIPTIVE NOTE: REVISED ED. I

SEP 65 42P NOLAN, JOHN F. I  
ARMENTI, AMEDIO W. I  
REPT. NO. TR-377  
CONTRACT: AF19(628)-5167 ,NONR-4102(U)  
MONITOR: ESD , TDR-65-456

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT SUBMITTED 3  
FEB 65.

DESCRIPTORS: (DATA STORAGE SYSTEMS;  
PROGRAMMING(COMPUTERS))

(PROGRAMMING(COMPUTERS), DATA STORAGE  
SYSTEMS), (DATA, INFORMATION RETRIEVAL), DATA  
PROCESSING SYSTEMS, COMPUTERS, MAN-MACHINE  
SYSTEMS (U)

IDENTIFIERS: TIME SHARING(COMPUTERS), ON-LINE  
SYSTEMS, FILE STRUCTURES, LIST PROCESSING (U)

THIS REPORT DESCRIBES AN EXPERIMENTAL PROGRAM  
SYSTEM DESIGNED TO TEST AND DEMONSTRATE ON-LINE  
STORAGE AND RETRIEVAL OF FORMATTED DATA BASED ON  
COMPLETE INTERNAL DESCRIPTIONS OF THE FILES. THE  
USE OF INTERNAL DESCRIPTIONS ALLOWS EACH USER (WHO  
NEED NOT BE A TRAINED PROGRAMMER) TO DEFINE,  
MODIFY, AND CROSS-ASSOCIATE DATA FILES TO SUIT HIS  
PARTICULAR NEEDS. THE EXPERIMENTAL PROGRAM SYSTEM  
WAS IMPLEMENTED BY REMOTE USE OF THE COMPATIBLE  
TIME-SHARING SYSTEM (CTS) FACILITIES OF  
PROJECT MAC AT THE MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-624 110 9/2 6/2  
LINCOLN LAB MASS INST OF TECH LEXINGTON  
ON LINE DOCUMENTATION OF THE COMPATIBLE TIME-SHARING  
SYSTEM. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAY 65 50P WINETT, JOEL M. I  
REPT. NO. TR-307  
CONTRACT: AF19(62B)-500 ,NONR-4102(01)  
PROJ: AF-649L  
MONITOR: ESD , TRD-65-68

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (PROGRAMMING(COMPUTERS),  
DOCUMENTATION), COMPATIBILITY, INFORMATION  
RETRIEVAL, DATA STORAGE SYSTEMS, PROGRAMMING  
LANGUAGES, COMPUTERS (U)  
IDENTIFIERS: ON-LINE SYSTEMS, TIME  
SHARING(COMPUTERS), COMIT PROGRAMMING LANGUAGE,  
DESCRIPTORS, MAC PROJECT (U)

THE DISSEMINATION OF INFORMATION ABOUT COMPUTER  
PROGRAMS IS HAMPERED BECAUSE OF THE LACK OF  
CONFORMITY IN DOCUMENTATION, THE DELAYS INHERENT IN  
ANY DISTRIBUTION SYSTEM, AND THE INABILITY TO SELECT  
ONLY DESIRED INFORMATION WITHOUT BEING FLOODED WITH  
INFORMATION WHICH IS NOT OF PRESENT INTEREST. AN  
ON-LINE SYSTEM FOR STORING AND RETRIEVING INFORMATION  
ABOUT THE PROGRAMS ASSOCIATED WITH THE COMPATIBLE  
TIME-SHARING SYSTEM (CTSS) HAS BEEN DEVELOPED  
TO BE INCLUDED AS A C" S COMMAND. THIS SYSTEM  
WILL HELP TO DOCUMENT THE SYSTEM COMMANDS, SUPERVISOR  
ENTRIES, LIBRARY SUBPROGRAMS, AND PUBLIC PROGRAMS.  
THESE TYPES OF PROGRAMS HAVE BEEN CHOSEN SINCE  
THERE IS AN URGENT NEED FOR HAVING THIS DOCUMENTATION  
AVAILABLE ON DEMAND, I.E., ON-LINE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-624 943 9/2 12/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
QUEUEING MODELS FOR FILE MEMORY OPERATION. (U)  
DESCRIPTIVE NOTE: MASTER'S THESIS,  
OCT 65 110P DENNING, PETER JAMES I  
REPT. NO. MAC-TR-21  
CONTRACT: NONR-4102(01)  
PROJ: NR-048-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPORT ON PROJ. MAC.

DESCRIPTORS: (QUEUEING THEORY, COMPUTERS),  
(DATA STORAGE SYSTEMS, OPERATION), MODEL  
THEORY, OPERATIONS RESEARCH, REAL TIME.  
MULTIPLE OPERATION (U)  
IDENTIFIERS: THESES, TIME SHARING(COMPUTERS),  
MACPROJECT (U)

A MODEL FOR THE AUXILIARY MEMORY FUNCTION OF A  
SEGMENTED, MULTI-PROCESSOR, TIME-SHARED COMPUTER  
SYSTEM IS SET UP. A DRUM SYSTEM IN PARTICULAR IS  
DISCUSSED, ALTHOUGH NO LOSS OF GENERALITY IS IMPLIED  
BY LIMITING THE DISCUSSION TO DRUMS. PARTICULAR  
ATTENTION IS GIVEN TO THE QUEUE OF REQUESTS WAITING  
FOR DRUM USE. IT IS SHOWN THAT A SHORTEST ACCESS  
TIME FIRST QUEUE DISCIPLINE IS THE MOST EFFICIENT,  
WITH THE ACCESS TIME BEING DEFINED AS THE TIME  
REQUIRED FOR THE DRUM TO BE POSITIONED, AND IS  
MEASURED FROM THE FINISH OF SERVICE OF THE LAST  
REQUEST TO THE BEGINNING OF THE DATA TRANSFER FOR THE  
SHORTEST ACCESS TIME QUEUE IS MADE, GIVING THE  
MINIMUM ACCESS TIME PROBABILITY DISTRIBUTION,  
EQUATIONS FOR THE NUMBER IN QUEUE, AND EQUATIONS FOR  
THE WAIT IN THE QUEUE. SIMULATIONS WERE USED TO  
VERIFY THESE EQUATIONS; THE RESULTS ARE DISCUSSED.  
FINALLY, A GENERAL MARKOV MODEL FOR QUEUES IS  
DISCUSSED IN AN APPENDIX. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-625 728 9/2 5/1  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
THE PRIORITY PROBLEM (U)  
NOV 65 36P GREENBERGER, MARTIN I  
REPT. NO. MAC-TR-22  
CONTRACT: NONR-4102(01)  
PROJ: NR-048-189

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC, PRESENTED AT  
THE NATIONAL MEETING OF THE OPERATIONS SOCIETY OF  
AMERICA (27TH), BOSTON, 6 MAY 65.

DESCRIPTORS: (+COMPUTERS, SCHEDULING),  
MATHEMATICAL ANALYSIS, REAL TIME, COSTS,  
NONLINEAR SYSTEMS (U)

IDENTIFIERS: MAC PROJECT, TIME  
SHARING (COMPUTERS), ON-LINE SYSTEMS, MULTIPLE  
ACCESS SYSTEM (U)

PRIORITY DECISIONS ARISE WHENEVER LIMITED  
FACILITIES MUST BE APPORTIONED AMONG COMPETITIVE  
DEMANDS FOR SERVICE. A PRIORITY OPERATION OF  
CONTEMPORARY INTEREST IS SCHEDULING A TIME-SHARED  
COMPUTER AMONG ITS CONCURRENT USERS. SERVICE  
REQUIREMENTS ARE NOT KNOWN IN ADVANCE OF EXECUTION.  
TO KEEP RESPONSE TIMES SHORT FOR SMALL REQUESTS,  
SERVICE INTERVALS ARE PARTITIONED AND SEGMENTS ARE  
SERVED SEPARATELY IN ROUND-ROBIN FASHION. A  
MATHEMATICAL ANALYSIS PINPOINTS THE TRADEOFF BETWEEN  
OVERHEAD AND DISCRIMINATION, IMPLICIT IN THIS  
PROCEDURE, AND ALLOWS ALTERNATE STRATEGIES TO BE  
COSTED. EXTENSIONS OF THE SIMPLE ROUND-ROBIN  
PROCEDURE ARE SUGGESTED, THE OBJECTIVES OF TIME  
SHARING ARE REVIEWED, AND IMPLICATIONS ARE DRAWN FOR  
THE DESIGN OF FUTURE PRIORITY AND PRICING SYSTEMS.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-627 077 18/4 15/3  
EDGERTON GERMESHAUSEN AND GRIER INC SANTA BARBARA  
CALIF

DASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT  
SYSTEM,

DESCRIPTIVE NOTE: PHASE I; MAY 64-JUL 65;  
DEC 65 118P BROWN, JAMES E. WEBB, R. J. A.

CONTRACT: DA-49-146-XZ-292  
MONITOR: NDL, DASA TR-71, 1680

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (+RADIOACTIVE FALLOUT, RADIATION  
MEASUREMENT SYSTEMS), (+RADIATION MEASUREMENT  
SYSTEMS, RADIOACTIVE FALLOUT), DOSE RATE;  
MEASUREMENT, REAL TIME, DATA PROCESSING  
SYSTEMS, DATA TRANSMISSION SYSTEMS, TELEMETRY  
SYSTEMS, NUCLEAR EXPLOSIONS

(U)

THE REPORT PRESENTS THE RESULTS OF A STUDY AND  
DESIGN EFFORT THAT DEMONSTRATES THE FEASIBILITY OF AN  
IMPROVED SYSTEM FOR THE MEASUREMENT AND COLLECTION OF  
RESIDUAL RADIATION DOSE RATE INFORMATION. THE  
IMPROVED SYSTEM CONSISTS OF AS MANY AS 100 DATA  
COLLECTION POINTS AT WHICH UP TO 200 DETECTORS MAY BE  
LOCATED. DATA ARE TELEMETERED TO A CENTRALLY  
LOCATED ONLINE COMPUTER FOR REAL TIME COMPUTATION.  
SUITABLE PERFORMANCE CHARACTERISTICS AND SYSTEM  
COMPATIBILITY HAVE BEEN DEMONSTRATED BY AN  
EXPERIMENTAL DETECTOR STATION FABRICATED FOR TEST AND  
EVALUATION. OTHER SYSTEM COMPONENTS WERE SELECTED  
FROM AVAILABLE OFF-THE-SHELF COMMERCIAL ITEMS.  
INCLUDED IN THE SYSTEM IS A PROVISION FOR  
DIFFERENTIATION BETWEEN THE DOSE RATE CONTRIBUTED BY  
THE DEPOSITED FALLOUT AND THE TRANSIT DOSE RATE.  
(AUTHOR)

(U)

UNCLASSIFIED

GDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-628 135 9/2

TRW SYSTEMS REDONDO BEACH CALIF  
ON LINE COMPUTER SYMBOLIC MANIPULATION. (U)  
DESCRIPTIVE NOTE: FINAL REPT. AUG 64-AUG 65.  
JAN 66 199P BLACKWELL, FREDERICK W. I  
REPT. NO. S253-6001-RU000,  
CONTRACT: AF 30(602)-3516;  
PROJ: AF-4594  
TASK: 459404,  
MONITOR: RADC TR-65-374

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+PROGRAMMING(COMPUTERS),  
PROGRAMMING LANGUAGES), (+PROGRAMMING LANGUAGES,  
DIGITAL COMPUTERS), COMPILERS, DATA PROCESSING  
SYSTEMS, ALGEBRA  
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE DEVELOPMENT IS DESCRIBED OF AN ON-LINE COMPUTER  
SYSTEM FOR SYMBOL MANIPULATION IN WHICH A USER CAN  
ARBITRARILY DEFINE SYMBOLS AND RULES FOR OPERATING  
WITH THESE SYMBOLS, AND THEN INSTRUCT THE COMPUTER  
ON-LINE TO SELECTIVELY APPLY THE RULES. AT THE  
BASIS OF THE SYSTEM IS A SMALL SET OF ELEMENTARY  
SYMBOL MANIPULATION OPERATORS WHICH CAN BE PROGRAMMED  
ON-LINE TO CARRY OUT MORE COMPLEX SYMBOLIC PROCESSES.  
THE APPLICATION OF THE SYSTEM TO ALGEBRA IS  
PRESENTED; THE RESULTANT SYSTEM FOR ALGEBRAIC SYMBOL  
MANIPULATION ALLOWS THE USER TO HAVE THE COMPUTER  
APPLY RULES OF ALGEBRA ON-LINE TO TRANSFORM  
MATHEMATICAL EXPRESSIONS WHICH HE HAS INPUT IN A  
NATURAL FORM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-629 667 9/3  
GENERAL ELECTRIC CO WASHINGTON D C  
THE APPLICATION OF LARGE-SCALE COMPUTERS TO U.S. AIR  
FORCE INFORMATION SYSTEMS. (U)  
DESCRIPTIVE NOTE: FINAL REPT., 16 JAN 65-16 JAN 66,  
MAR 66 77P CAMPBELL, JOHN B. I  
MCCABE, JOHN P. INEVANS, ESSIE S. I  
CONTRACT: AF 19(628)-4963;  
PROJ: AF-2801  
TASK: 2801011  
MONITOR: ESD . TE-66-137

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*AIR FORCE, WAGES), (\*COMPUTERS,  
PERSONNEL MANAGEMENT), (+AIR FORCE PERSONNEL;  
COMPUTERS), MATHEMATICAL MODELS, ALGORITHMS,  
FEASIBILITY STUDIES, REMOTE CONTROL SYSTEMS (U)  
IDENTIFIERS: ON-LINE SYSTEMS, TIME  
SHARING(COMPUTERS) (U)

TWO AIR FORCE FUNCTIONS WERE EXAMINED TO  
DETERMINE THE FEASIBILITY OF CENTRALIZING THE TASKS  
AT A COMPUTER CENTER WITH REMOTE ACCESS. THE  
APPLICATIONS EXAMINED: (1) AN OVERALL PAY SYSTEM,  
AND (2) A SYSTEM TO AID IN THE ASSIGNMENT OF  
PERSONNEL TO JOBS, PROVED INTERESTING IN THEIR  
DEMANDS UPON LARGE-SCALE DATA-HANDLING AND  
MANIPULATION CAPABILITIES. FEASIBILITY OF BOTH THE  
PAY AND MAN-JOB MATCH SYSTEMS WAS SHOWN AND EACH WAS  
EXAMINED AS A TIME-SHARING TYPE OF APPLICATION.  
THE GENERALIZED TIME-SHARING MODEL SHOWED  
CENTRALIZATION OF ALL COMPUTATIONAL POWER TO BE MORE  
ECONOMICAL THAN DISTRIBUTING LOGICAL CAPABILITY TO  
REMOTE STATIONS. THREE SUPPORTING ANALYTIC STUDIES  
WERE PERFORMED. THE FIRST DEALS WITH A MEANS FOR  
PARTITIONING A LARGE FILE TO PERMIT, IN SOME CASES,  
GREATLY REDUCED SEARCHING TIMES. THE SECOND DEALS  
WITH A MATHEMATICAL MODEL FOR A TIME-SHARED COMPUTER  
SYSTEM WHICH ALLOWS FOR ANALYTICAL CALCULATION OF  
PROCESSING TIMES AT EACH TERMINAL AS A FUNCTION OF  
SYSTEM LOADING. THE THIRD INVESTIGATES THREE  
COMPUTATIONAL ALGORITHMS FOR PERFORMING MAN-JOB MATCH  
CALCULATIONS. ESTIMATES OF PROCESSING TIMES ARE  
GIVEN, AND THE METHODS COMPARED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-632 473 5/2 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY) SYSTEM, (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
APR 66 27P BURNAUGH, HOWARD P. I  
REPT. NO. SP-2338/000/01,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-615 718.

DESCRIPTORS: (\*INFORMATION RETRIEVAL, REAL TIME),  
(\*BIBLIOGRAPHIES, \*DISPLAY SYSTEMS),

CLASSIFICATION, SUBJECT INDEXING, COMPUTATIONAL  
LINGUISTICS, PROGRAMMING(COMPUTERS), MAGNETIC  
TAPE, TELETYPE SYSTEMS

(U)

IDENTIFIERS: FILE STRUCTURES, TIME SHARING, ON-  
LINE SYSTEMS, LIGHT PENS, BOLD(BIBLIOGRAPHIC ON-  
LINE DISPLAY)

(U)

THE BOLD (BIBLIOGRAPHIC ON-LINE DISPLAY)  
SYSTEM SERVES AS A GENERAL PURPOSE VEHICLE FOR  
RESEARCH ON THE COMPONENTS OF A REAL-TIME RETRIEVAL  
SYSTEM. SPECIFIC SUBJECTS FOR INVESTIGATION ARE  
INDEXING, CLASSIFICATION AND CATEGORIZING SCHEMES,  
FILE ORGANIZATION, AND USER-SYSTEM COMMUNICATION.  
THE PROGRAM OPERATES IN A 'TIME-SHARING'  
ENVIRONMENT DOING INDEPENDENT RETRIEVAL FOR MULTIPLE  
SIMULTANEOUS USRS. A RETRIEVAL STATION MAY BE ANY  
TELETYPE CONNECTED TO THE TIME-SHARING SYSTEM. A  
STATION MAY BE AUGMENTED WITH A CRT CONSOLE AND A  
LIGHT PEN FOR RAPID DISPLAYING OF THE RETRIEVAL  
INFORMATION. RETRIEVAL IS EFFECTED BY THE  
SPECIFICATION OF CATEGORIES AND/OR RETRIEVAL PHRASES,  
USING BOOLEAN CONNECTORS. THERE ARE TWO MODES  
FOR RETRIEVAL OPERATIONS: THE BROWSE MODE AND THE  
SEARCH MODE. IN THE BROWSE MODE THE USER MAY  
SPECIFY BROAD CATEGORIES AND RETRIEVAL TERMS AND THEN  
BROWSE THROUGH THE RETRIEVAL INFORMATION ENTRY BY  
ENTRY. THE USER DESIGNATES WHAT INFORMATION IS TO  
BE RETURNED. THIS MAY BE ANYTHING THAT IS DEFINED  
IN THE DATA BASE, AND MAY RANGE FROM A SINGLE  
COMPONENT (SUCH AS AUTHOR, TITLE, ETC., FOR A  
BIBLIOGRAPHIC DATA SET) TO A COMPLETE BODY OF TEXT  
(I.E., ABSTRACT). (AUTHOR) (FOR PRESENTATION  
AT THE THIRD ANNUAL COLLOQUIUM ON INFORMATION  
RETRIEVAL, UNIV. OF PENNSYLVANIA, MAY 12-13.  
1966)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-432 930 9/2 5/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
SEMIANNUAL TECHNICAL SUMMARY REPORT TO THE DIRECTOR,  
ADVANCED RESEARCH PROJECTS AGENCY FOR THE PERIOD 18  
NOVEMBER 1965 THROUGH 17 MAY 1966 (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO,  
MAY 66 54P BAUM,C. I  
REPT. NO. TH-687/006/00,  
CONTRACT AF 19(620)-5166, ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTORS: (+INFORMATION RETRIEVAL, STATE-OF-THE-ART REVIEWS), (+PROGRAMMING LANGUAGES, STATE-OF-THE-ART REVIEWS), (+DATA PROCESSING SYSTEMS, COMPUTERS), (+COMPUTERS, SCHEDULING), SYNTAX, PROGRAMMING(COMPUTERS), COMPILERS, SYSTEMS ENGINEERING, COMMAND + CONTROL SYSTEMS (U)  
IDENTIFIERS: LUCID, TIEL, LISP, TIME SHARING(COMPUTERS) (U)

THIS REPORT DESCRIBES WORK DONE IN THE ARPA SPONSORED INFORMATION PROCESSING TECHNIQUES AND COMMAND AND CONTROL RESEARCH AND LABORATORY PROGRAM FROM 18 NOVEMBER 1965 THROUGH 17 MAY 1966. PROJECTS COVERED ARE TIME-SHARING, DATA BASE SYSTEMS, COMPUTER PROCESSING OF NATURAL LANGUAGE, AND THE RESEARCH AND TECHNOLOGY LABORATORY. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-634 325 F/2 S/I 12/2  
CARNEGIE INST OF TECH PITTSBURGH PA GRADUATE SCHOOL OF  
INDUSTRIAL ADMINISTRATION  
AN EVALUATION OF COMMERCIAL TIME SHARING  
SYSTEMS. (U)  
DESCRIPTIVE NOTE: MANAGEMENT SCIENCES RESEARCH REPT.,  
66 60P GOLD, H. M. (TEDDY, A. C.)  
REPT. NO. MSRR-71,  
CONTRACT NONR-760(24),  
PROJ. NR-047-048,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ALSO UNDER CONTRACT NONR-  
4102(01) PROJ. MAC AT M.I.T.

DESCRIPTORS: (+COMPUTERS, +OPERATIONS RESEARCH),  
(+MANAGEMENT ENGINEERING, COMPUTERS), DATA  
PROCESSING SYSTEMS, COMMERCE (U)  
IDENTIFIERS: TIME SHARING(COMPUTERS), MULTIPLE  
ACCESS SYSTEM (U)

THE DESIGN OF COMPUTERS AND SYSTEMS WHICH AFFORD  
SIMULTANEOUS MULTIPLE-USER ACCESS HAS BEEN A SUBJECT  
OF INDUSTRIAL AND ACADEMIC RESEARCH FOR SEVERAL  
YEARS. INSTALLATION OF SEVERAL 'TIME-SHARED'  
COMPUTER SYSTEMS HAS PROCEEDED WITH ADDITIONAL  
RESEARCH AND DEVELOPMENT DEVOTED TO THEIR  
IMPROVEMENT. THE MAJOR EFFORT EVIDENCED, HOWEVER,  
HAS BEEN DIRECTED TO THE DEVELOPMENT OF THESE  
FACILITIES AS SYSTEMS WITH ONLY SECONDARY ATTENTION  
PAID TO THE REQUIREMENTS OF THE POTENTIAL USERS AND  
ALMOST NONE TO MANAGEMENT USERS -- THE SUBJECT OF  
INTEREST HERE. IN THIS PAPER WE WILL ATTEMPT TO  
EVALUATE CERTAIN ASPECTS OF TIME-SHARED SYSTEMS USING  
THE REQUIREMENTS OF THE POTENTIAL MANAGERIAL USER AS  
UNITS OF ANALYSIS. POSSIBLE APPLICATIONS OF TIME-  
SHARING ARE DISCUSSED. DESCRIPTION OF USAGE IN  
EXTANT SYSTEMS IS INCLUDED WHERE APPLICABLE BUT THE  
FAR-MORE-VAST POTENTIAL USES CONSTITUTE THE PRIME  
FOCUS. IN ADDITION, TWO COMMERCIAL TIME-SHARING  
SERVICES AVAILABLE TO MANY COMPANIES ARE DESCRIBED IN  
DETAIL AS POSSIBLE PREDECESSORS OF ENVISIONED  
GIGANTIC CENTRALIZED COMPUTER SYSTEMS WHOSE ECONOMIES  
OF SCALE AND ELIMINATION OF REDUNDANT DATA STORAGE  
MAKE THEIR USE BY EVEN THE LARGEST OF COMPANIES  
ADVANTAGEOUS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-635 215 9/2 12/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARING OPERATIONS AND MANAGEMENT. (U)  
HAR 6A 20P FJALA; F. T. I.  
REPT. NO. SP-2417,  
CONTRACT AF 19(620)-5146, ARPA ORDER-273

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
DATA PROCESSING MANAGEMENT ASSOCIATION CONFERENCE,  
CHICAGO, ILL., 20-24 JUN 66.

DESCRIPTORS: (+OPERATIONS RESEARCH, +DIGITAL  
COMPUTERS), (+MANAGEMENT ENGINEERING, DIGITAL  
COMPUTERS), COMPUTER OPERATORS, SCHEDULING (U)

IDENTIFIERS: TIME SHARING(COMPUTERS), AH/FSN-  
32 (U)

THIS PAPER DESCRIBES THE OPERATION OF THE TIME-  
SHARING SYSTEM NOW IN USE IN THE RESEARCH AND  
TECHNOLOGY LABORATORY OF THE SYSTEM  
DEVELOPMENT CORPORATION. THE SCOPE OF THE  
PAPER COVERS THE OPERATOR'S DUTIES, PLANT LAYOUT, AND  
CONSIDERATIONS THAT OPERATIONS MANAGERS SHOULD BE  
GIVING TO PRESENT AND INHERENT PROBLEMS POSED BY THE  
NEW METHODS OF COMPUTER OPERATIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-835 966 9/2 1376  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
TRAFFIC CONTROL IN A MULTIPLEXED COMPUTER  
SYSTEM. (U)

DESCRIPTIVE NOTE: DOCTORAL THESIS.  
JUN 66 87P SALTZER, JEROME HOWARD I  
REPT. NO. MAC-TR-30.  
CONTRACT: NONR-4302(01),  
PROJ: NR-04B-189,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (+TRAFFIC, CONTROL), (+COMPUTERS,  
TRAFFIC), SCHEDULING, MULTIPLE OPERATION (U)  
IDENTIFIERS: MAC PROJECT (U)

THE THESIS DESCRIBES A SCHEME FOR PROCESSOR  
MULTIPLEXING IN A MULTIPLE USER, MULTIPLE PROCESSOR  
COMPUTER SYSTEM. THE SCHEME IS BASED UPON A  
DISTRIBUTED SUPERVISOR WHICH MAY BE DIFFERENT FOR  
DIFFERENT USERS. THE PROCESSOR MULTIPLEXING METHOD  
PROVIDES SMOOTH INTER-PROCESS COMMUNICATION,  
TREATMENT OF INPUT/OUTPUT CONTROL AS A SPECIAL CASE  
OF INTER-PROCESS COMMUNICATION, AND PROVISION FOR A  
USER TO SPECIFY PARALLEL PROCESSING OR SIMULTANEOUS  
INPUT/OUTPUT WITHOUT INTERRUPT LOGIC. BY TREATMENT  
OF PROCESSORS IN AN ANONYMOUS POOL, SMOOTH AND  
AUTOMATIC SCALING OF SYSTEM CAPACITY IS OBTAINED AS  
MORE PROCESSORS AND MORE USERS ARE ADDED. THE BASIC  
DESIGN HAS INTRINSIC OVERHEAD IN PROCESSOR TIME AND  
MEMORY SPACE WHICH REMAINS PROPORTIONAL TO THE AMOUNT  
OF USEFUL WORK THE SYSTEM DOES UNDER EXTREMES OF  
SYSTEM SCALING AND LOADING. THE DESIGN IS NOT  
LIMITED TO A SPECIFIC HARDWARE IMPLEMENTATION; IT IS  
INTENDED TO HAVE WIDE APPLICATION TO MULTIPLEXED,  
MULTIPLE PROCESSOR COMPUTER SYSTEMS. THE PROCESSOR  
TRAFFIC CONTROLLER DESCRIBED HERE IS AN INTEGRAL PART  
OF MULTICS, A MULTIPLEXED INFORMATION AND  
COMPUTING SERVICE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-636 839 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
JOB DESCRIPTIONS AND SCHEDULING IN THE SDC 9-32 TIME-  
SHARING SYSTEM, (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO,  
JUN 46 31P MCISAAC, PAUL V. I  
REF ID: TH-2996,  
CONTRACT AF 1916(87)-5164, ARPA ORDER-773

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+OPERATIONS RESEARCH, +DIGITAL  
COMPUTERS), SCHEDULING, ALGORITHMS,

OPTIMIZATION (U)

IDENTIFIERS: TIME SHARING(COMPUTERS) (U)

THIS PAPER DESCRIBES THE CURRENT SDC 9-32 TIME-  
SHARING SYSTEM SCHEDULING ALGORITHM, PRESENTS  
SOME SIMULATION RESULTS AND OBSERVATIONS WHICH LED TO  
ITS DESIGN AND IMPLEMENTATION, AND EVALUATES THE  
ALGORITHM ON THE BASIS OF EMPIRICAL SYSTEM DATA.  
GENERAL OBSERVATIONS ON SCHEDULING ARE ALSO  
PRESENTED IN ORDER TO PROVIDE INSIGHT INTO THE  
PROBLEM AND TO ASSIST SYSTEM DESIGNERS IN THE  
DEVELOPMENT OF OPTIMAL SCHEDULING ALGORITHMS FOR  
FUTURE TIME-SHARED SYSTEMS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 961 1772  
RAND CORP SANTA MONICA CALIF  
THE IMPACT OF THE NEW TECHNOLOGY ON COMMAND SYSTEM  
DESIGN.  
JUL 66 IIP WESSEL, ANDREW E. I  
REPT. NO. P-3409.

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
CONGRESS ON INFORMATION SYSTEM SCIENCE AND  
TECHNOLOGY (CISD), BUCK HILL FALLS, PENNSYLVANIA,  
NOVEMBER 1966.

DESCRIPTORS: (\*COMMAND + CONTROL SYSTEMS, STATE-  
OF-THE-ART REVIEWS), REAL TIME, DATA PROCESSING  
SYSTEMS, PROGRAMMING(COMPUTERS), MANAGEMENT  
PLANNING, SYSTEMS ENGINEERING

(U)

A FEW YEARS AGO S. M. GENENSKY AND AUTHOR WROTE A  
PAPER TITLED, SOME THOUGHTS ON DEVELOPING  
FUTURE COMMAND AND CONTROL SYSTEMS. IN  
BRIEF, THE PAPER ARGUED FOR A VERSION OF AN 'ON-SITE'  
DEVELOPMENT AND DESIGN PHILOSOPHY SUPPORTED BY A  
MILITARY SERVICE CENTER WHICH WOULD PROVIDE THE  
APPROPRIATE SPECIALISTS ON LOAN TO THE GIVEN USER  
COMMAND. THIS PAPER RAISES SOME QUESTIONS AS TO  
WHETHER THE NEWER CAPABILITIES FOR 'ON-LINE'  
INTERACTIONS BETWEEN USERS AND AUTOMATED SYSTEMS HAVE  
OUTMODED THE PREVIOUS THINKING ON THE SUBJECT OF  
COMMAND SYSTEM DESIGN. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-636 993 9/2 S/8  
RAND CORP SANTA MONICA CALIF  
JOSSI: INTRODUCTION TO A HELPFUL ASSISTANT. (U)  
JUL 66 BOP BAKER C. L. I.  
REPT. NO. RM-5088-PR,  
CONTRACT: AF 49(638)-1700,

UNCLASSIFIED REPORT  
AVAILABILITY: RAND CORP, 1700 MAIN ST., SANTA  
MONICA, CALIF. \$2.00.  
SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTERS, \*MAN-MACHINE SYSTEMS),  
REAL TIME; DIGITAL COMPUTERS; SPECIAL PURPOSE  
COMPUTERS; REMOTE CONTROL SYSTEMS; SYSTEMS  
ENGINEERING (U)  
IDENTIFIERS: JOSSI(JOHNNIAC OPEN SHOP  
SYSTEM) (U)

A STEP-BY-STEP DEMONSTRATION OF JOSS--A SYSTEM  
DESIGNED TO PROVIDE THE INDIVIDUAL SCIENTIST AND  
ENGINEER WITH A PERSONAL COMPUTATIONAL SERVICE  
IMMEDIATELY AVAILABLE, WHENEVER REQUIRED, IN HIS OWN  
WORKING ENVIRONMENT. THE DISTINGUISHING FEATURES  
OF JOSS ARE: MOBILE CONSOLES EQUIPPED WITH  
ELECTRIC TYPEWRITERS FOR INPUT AND OUTPUT; HIGHLY  
READABLE AND POWERFUL LANGUAGE FOR NUMERIC  
COMPUTATION; ENGLISH CAPITALIZATION, SPELLING, AND  
PUNCTUATION RULES; EASY EDITING; QUICK RESPONSE;  
EXACT INPUT; FAMILIAR DECIMAL ARITHMETIC; EXACT  
OUTPUT; AND REPORT-QUALITY FORMATTED OUTPUT. THE  
INTIMATE INTERACTION BETWEEN MAN AND MACHINE PERMITS  
THE JOSS USER TO EXERCISE JUDGMENT CONTINUALLY  
DURING THE COURSE OF COMPUTATION, CHANGING AND  
MODIFYING THE PROCEDURE AS HE WISHES. THIS IS ONE  
OF THE UNIQUE ASPECTS THAT DISTINGUISHES JOSS FROM  
OTHER SYSTEMS AND HAS LED TO ITS ENTHUSIASTIC  
ADOPTION BY THE RAND STAFF. THIS TALK WAS  
PRESENTED TO THE ELEVENTH ANNUAL DATA  
PROCESSING CONFERENCE AT THE UNIVERSITY OF  
ALABAMA BIRMINGHAM CENTER ON 4 MAY 1966.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 192 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
MODELS AND DATA STRUCTURES FOR DIGITAL LOGIC  
SIMULATION. (U)  
DESCRIPTIVE NOTE: MASTER'S THESIS.  
JUN 66 140P SMITH, DONALD LEIGH I  
REPT. NO. MAC-TR-31,  
CONTRACT NO NR-4102(01),  
PROJ. NR-048-109, RR-003-09-01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: COMPUTER LOGIC,  
• MODELS(SIMULATIONS)), DIGITAL COMPUTERS,  
COMBINATORIAL ANALYSIS; ALGORITHMS, DATA  
PROCESSING SYSTEMS (U)  
IDENTIFIERS: TIME SHARING(COMPUTERS), THESES (U)

A DIGITAL LOGIC SIMULATION SYSTEM IS PROPOSED FOR DESIGN VERIFICATION. LOGIC TO BE SIMULATED IS SPECIFIED WITH A HIGH-LEVEL REGISTER TRANSFER DESIGN LANGUAGE, AND THE SIMULATION SYSTEM OPERATES ON-LINE ON A LARGE TIME-SHARED COMPUTER. THE PROBLEM OF SELECTING ADEQUATE CIRCUIT AND SIGNAL MODELS FOR THIS PURPOSE IS CONSIDERED. MODELS ARE PROPOSED WITH SUFFICIENT TIMING DETAIL TO ALLOW THE SIMULATION SYSTEM TO DETECT TIMING ERRORS WHICH CURRENTLY ARE FOUND BY MANUAL CHECKING OR PROTOTYPE DEBUGGING. A DATA STRUCTURE FOR REPRESENTING IDEALIZED CIRCUIT AND SIGNAL MODELS AND A MATCHING SIMULATION ALGORITHM IS DISCUSSED. THE DATA STRUCTURE IS A DIRECT REPRESENTATION OF A COMPLETE SUBSET OF THE DESIGN LANGUAGE AND IS ORGANIZED SO THAT IT CAN BE INCREMENTALLY MODIFIED TO REFLECT DESIGN CHANGES. THE SIMULATION ALGORITHM IS VERY EFFICIENT BECAUSE COMBINATIONAL LEVELS ARE RE-EVALUATED ONLY IF THEIR VALUES ARE NEEDED AND MAY HAVE CHANGED SINCE LAST EVALUATED. THE DATA STRUCTURE IS EXPANDED TO REPRESENT DETAILED CIRCUIT AND SIGNAL MODELS. A METHOD OF INTERMINGLING IDEALIZED AND DETAILED MODELS AND EFFICIENTLY SIMULATING VERY LARGE DESIGNS IS DISCUSSED. EXTENSIONS ARE PROPOSED TO THE DESIGN LANGUAGE SO THAT IT CAN BE USED TO SPECIFY MODEL PARAMETERS AND SERVE AS THE SIMULATION COMMAND LANGUAGE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-637 216 9/2

MASSACHUSETTS INST OF TECH CAMBRIDGE  
INPUT/OUTPUT IN TIME-SHARED, SEGMENTED,  
MULTIPROCESSOR SYSTEMS.

(U)

DESCRIPTIVE NOTE: MASTER'S THESIS.

FEB 66 7SP SMITH,ARTHUR ANSHEL I

REPT. NO. MAC-TR-28,

CONTRACT: NONR-4102(01),

PROJ: NR-048-109,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MAC.

DESCRIPTORS: (+INPUT-OUTPUT DEVICES, \*SPECIAL  
PURPOSE COMPUTERS), OPERATIONS RESEARCH, DIGITAL  
COMPUTERS, MULTIPLE OPERATION

(U)

IDENTIFIERS: TIME SHARING(COMPUTERS), THESES

(U)

AFTER INTRODUCING AND DEFINING THE CONCEPTS OF  
TIME-SHARING, SEGMENTATION, AND MULTIPROCESSING, TWO  
CLASSES OF SYSTEMS INCORPORATING THESE ARE  
INTRODUCED. BOTH CLASSES USE ASSOCIATIVE MEMORIES,  
AS "LOOK BEHIND" DEVICES TO SPEED THE OPERATION OF  
ADDRESSING THE SEGMENTED MEMORY, WITH THE DISTINCTION  
BETWEEN CLASSES BEING THE LOCATION OF THE ASSOCIATIVE  
MEMORY. IN ONE CLASS, THERE IS ONE ASSOCIATIVE  
MEMORY FOR EACH PROCESSING ELEMENT, NO MATTER HOW  
MANY MAIN MEMORY UNITS ARE CONNECTED TO A PROCESSOR;  
IN THE SECOND CLASS, THERE IS ONE ASSOCIATIVE MEMORY  
FOR EACH MAIN MEMORY UNIT, WITH THE PROCESSORS  
SHARING THE ASSOCIATIVE MEMORY. AFTER INTRODUCING  
TWO CRITERIA FOR INPUT/OUTPUT SYSTEMS, THAT THE  
OVERHEAD ASSOCIATED WITH THEIR USE BE SMALL AND THAT  
THEY MAY BE PHYSICALLY AND LOGICALLY SIMPLE, AND  
DESCRIBING FURTHER OPERATIONS OF THE SYSTEMS, IT IS  
CONCLUDED THAT MEMBERS OF THE SECOND CLASS, HAVING  
SHARED ASSOCIATIVE MEMORIES, BEST MEET THESE  
CRITERIA. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 647 5/8 5/2 5/7 9/2

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
ON-LINE INTERACTIVE DISPLAYS IN APPLICATION TO  
LINGUISTIC ANALYSIS AND INFORMATION PROCESSING AND  
RETRIEVAL.

(U)

DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
SEP 66 22P SIMMONS,R. F.  
REPT. NO. SP-2432/001/00.  
CONTRACT: AF 19(628)-5166,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
SYMPOSIUM ON MAN/MACHINES INTERACTION, PARIS  
(FRANCE), 10-17 OCT 66. SEE ALSO AD-615 718,  
AD-632 473.

DESCRIPTORS: (+MAN-MACHINE SYSTEMS, DISPLAY  
SYSTEMS), INFORMATION RETRIEVAL, COMPUTATIONAL  
LINGUISTICS, REPORTS, BIBLIOGRAPHIES

(U)

IDENTIFIERS: ON-LINE SYSTEMS,  
KERNELIZATION(SENTENCES), BOLD,SENTENCES

(U)

AS COMPUTERS ARE USED FOR INCREASINGLY COMPLEX  
OPERATIONS SUCH AS RETRIEVING DOCUMENTS AND ANALYZING  
SENTENCES, IT BECOMES APPARENT THAT HUMAN DECISION-  
MAKING IS STILL AN ESSENTIAL ELEMENT OF THE PROCESS.  
THE USE OF THE ON-LINE INTERACTIVE CAPABILITY OF  
TODAY'S THIRD-GENERATION COMPUTERS SUPPORTED BY  
TYPEWRITER AND DISPLAY SCOPE TERMINALS MAKES THE  
CONSTRUCTION OF COMPUTER-AIDED SYSTEMS FOR THESE  
COMPLEX TASKS AN ATTRACTIVE APPROACH. TWO SUCH  
SYSTEMS ARE DESCRIBED IN THE PAPER. ONE IS BOLD,  
A DOCUMENT RETRIEVAL SYSTEM THAT OFFERS THE USER AN  
ON-LINE BROWSING CAPABILITY AS WELL AS THE ABILITY TO  
RETRIEVE DOCUMENTS OR CONSTRUCT BIBLIOGRAPHIES USING  
COMPUTER-DRIVEN DISPLAY SCOPES AND TYPEWRITERS.  
THE OTHER IS A SENTENCE-ANALYSIS SYSTEM THAT  
COMPUTES DEPENDENCY ANALYSES, PHRASE STRUCTURE  
ANALYSES AND KERNEL SETS FOR EACH SENTENCE IT IS  
GIVEN. THIS SYSTEM PRODUCES AND DISPLAYS MULTIPLE  
ANALYSES AND ALLOWS THE USER TO CORRECT THEM OR TO  
SELECT THOSE WHICH ARE SATISFACTORY. THE CONCLUSION  
IS THAT FOR SOME TIME TO COME COMPLEX INFORMATION  
PROCESSING SYSTEMS--PARTICULARLY THOSE CONCERNED WITH  
NATURAL LANGUAGES--WILL REMAIN AT THE LEVEL OF  
SEMIAUTOMATIC COMPUTER AIDS TO HUMAN INFORMATION  
PROCESSING. AS SUCH, THEIR USEFULNESS CAN BE  
MAXIMIZED BY OPTIMAL USE OF INTERACTIVE DISPLAY  
TECHNOLOGY. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-640 652 5/8 5/2 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
UTILIZATION OF ON-LINE INTERACTIVE DISPLAYS. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
AUG 66 3SP BORKO, H. I  
REPT. NO. SP-2575.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
CONGRESS ON INFORMATION SYSTEM SCIENCE AND  
TECHNOLOGY (3RD), BUCK LL FALLS, PENNSYLVANIA,  
NOVEMBER 20-23 1966.

DESCRIPTORS: (+MAN-MACHINE SYSTEMS, DISPLAY  
SYSTEMS), (+INFORMATION RETRIEVAL, MAN-MACHINE  
SYSTEMS), PROGRAMMING(COMPUTERS), PROBLEM  
SOLVING, DECISION MAKING, DATA PROCESSING SYSTEMS,  
SYNTAX, TELETYPE SYSTEMS, CATHODE RAY TUBES,  
COMPUTERS (U)

THE VERSATILITY AND ADVANTAGES OF USING ON-LINE  
INTERACTIVE DISPLAYS ARE ILLUSTRATED BY EXAMPLES FROM  
(1) THE GENERAL PURPOSE DISPLAY SYSTEM  
(GPDS), (2) THE PATTERN LEARNING PARSE  
(PLP II), AND (3) THE BIBLIOGRAPHIC ON-  
LINE DISPLAY SYSTEM (BOLD). ALTHOUGH THESE  
SYSTEMS ARE DESIGNED FOR DIFFERENT PURPOSES THEY ALL  
UTILIZE DISPLAYS AS COMMUNICATION CHANNELS BY WHICH  
THE MAN AND THE MACHINE ARE ABLE TO ENGAGE IN A  
DIALOG AND WORK TOGETHER TO SOLVE PROBLEMS. THE  
COMPUTER PROCESSES DATA RAPIDLY AND DISPLAYS THE  
RESULTS. THE INFORMATION PROVIDED IN THE DISPLAYS  
ENABLES THE USER TO STEER AND CONTROL THE STEP-BY-  
STEP PROGRESS OF THE PROGRAM; NOT ONLY ARE  
PROBLEMS SOLVED MORE EFFICIENTLY, BUT THE USERS ARE  
MORE SATISFIED BY THE RESULTS ACHIEVED. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-642 255 9/2 5/2  
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF  
ELECTRICAL ENGINEERING  
THE PDP-5 AS A SATELLITE PROCESSOR, (U)  
MAY 66 ISP WEINBERG, PAUL R. I  
WOLFBURG, MICHAEL S. (U)  
CONTRACT: NONR-551(40)

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN DECUS PROCEEDINGS PSI-64  
MAY 1966.

DESCRIPTORS: (•DATA PROCESSING SYSTEMS,  
•INFORMATION RETRIEVAL), REAL TIME, MULTIPLE  
OPERATION, REMOTE CONTROL SYSTEMS, INPUT-OUTPUT  
DEVICES, COMPUTERS (U)  
IDENTIFIERS: PDP-5, IBM 7040 (U)

A PDP-5 AT THE UNIVERSITY OF PENNSYLVANIA IS  
ATTACHED TO AN IBM 7040 THROUGH A HIGH SPEED DATA  
CHANNEL. IN THIS CONFIGURATION IT SERVES AS AN  
INTERMEDIARY BETWEEN THE 7040 AND SEVERAL REMOTE  
CONSOLES INCLUDING CHARACTER DISPLAYS AND  
TELETYPE. THE PURPOSE IS TO PROVIDE REAL-TIME  
INFORMATION RETRIEVAL SYSTEMS WITH A REMOTE CONSOLE  
CAPABILITY. THIS PAPER CONSISTS OF TWO PARTS:  
THE FIRST SECTION DESCRIBED THE INTERACTION AMONG  
THE VARIOUS SUBSYSTEMS, AND THE SECOND SECTION  
PRESENTS AN ACCOUNT OF THE ASSEMBLY OF PDP-5  
PROGRAMS ON THE 7040. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-643 313 9/2 12/1  
COMPUTER RESEARCH CORP NEWTON MASS  
MAGIC PAPER - AN ON-LINE SYSTEM FOR THE MANIPULATION  
OF SYMBOLIC MATHEMATICS. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
APR 66 67P CLAPP,LEWIS C. IJORDAN,DALE  
E. IWAX,ELLEN J. IWOLF,ROBERT S. I  
REPT. NO. R-105-1  
CONTRACT: AF 19(628)-5098  
PROJ: J-105

UNCLASSIFIED REPORT

DESCRIPTORS: (+MATHEMATICS, \*DATA PROCESSING  
SYSTEMS), EQUATIONS, ALGEBRA, OPERATION (U)  
IDENTIFIERS: ON-LINE SYSTEMS, MAGIC PAPER SYSTEM,  
SYMBOLIC MATHEMATICS, LIGHT PENS, \*DISPLAY  
SYSTEMS (U)

THE REPORT DESCRIBES THE PRELIMINARY VERSION OF THE  
MAGIC PAPER SYSTEM. THROUGH A CONVERSATIONAL  
INTERACTION, THE SYSTEM AIDS THE SCIENTIST, ENGINEER  
OR MATHEMATICIAN AS HE PERFORMS SYMBOLIC OPERATIONS  
ON LINEAR ALGEBRAIC EQUATIONS. THE USER BEGINS BY  
ENTERING HIS INITIAL EQUATIONS AND CONDITIONS THROUGH  
A MATHEMATICAL KEYBOARD. AS HE TYPES THESE  
EQUATIONS, THEY ARE DISPLAYED ON A FLICKER-FREE SCOPE  
IN STANDARD MATHEMATICAL NOTATION. USING A PUSH-  
BUTTON CONTROL PANEL AND A LIGHT PEN, HE MAY SELECT  
EXPRESSIONS AND OPERATIONS WHICH ARE TO BE PERFORMED  
ON THEM. IF THE OPERATION IS LEGAL, THE SYSTEM  
GENERATES A NEW EQUATION WHICH IS THEN ADDED TO THE  
SCOPE DISPLAY. WITH THE BASIC SET OF OPERATIONS,  
THE USER MAY CREATE NEW OPERATORS WHICH CAN THEN BE  
ADDED TO THE SYSTEM. HE CAN ALSO INTRODUCE SPECIAL  
NOTATIONAL CONVENTIONS. THE USER HAS CONSIDERABLE  
CONTROL WHICH ENAULES HIM TO PERSONALIZE THE SYSTEM  
TO MEET HIS OWN PARTICULAR NEEDS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-644 339 9/2  
RAND CORP SANTA MONICA CALIF  
JOSS: INTRODUCTION TO THE SYSTEM  
IMPLEMENTATION,  
NOV 66 21P BRYAN, G. E. I  
REPT. NO. P-3486

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE FALL SYMPOSIUM OF  
DIGITAL EQUIPMENT COMPUTER USERS SOCIETY (DECUS),  
LAWRENCE RADIATION LABORATORY, BERKELEY,  
CALIFORNIA, NOVEMBER 4 AND 5, 1966.

DESCRIPTORS: (\*DIGITAL COMPUTERS, \*TIME  
SHARING), OPERATION, PROBLEM SOLVING

(U)

IDENTIFIERS: JOSS

(U)

JOSS IS A TIME-SHARED COMPUTER SYSTEM THAT PROVIDES  
FOR THE SOLUTION OF NUMERICAL PROBLEMS VIA AN EASILY  
LEARNED LANGUAGE AT REMOTE TYPEWRITER CONSOLES.  
THE PDP-6 HARDWARE USED TO IMPLEMENT JOSS  
CONSISTS OF 32,000 WORDS OF 1.75M SEC CORE MEMORY, A  
1-MILLION-WORD 4M SEC DRUM, A 6-MILLION-WORD  
DISCFILE, AND VARIOUS PERIPHERAL DEVICES. A  
SPECIAL DATA RELOCATION MODE FOR MEMORY REFERENCES  
HAS BEEN ADDED TO FACILITATE INTERPRETATION OF JOSS  
PROGRAMS. THE JOSS CONSOLES, BUILT AROUND A  
SELECTRIC I/O TYPEWRITER, WERE SPECIALLY  
MANUFACTURED TO RAND SPECIFICATIONS. FEATURES  
INCLUDE FULL DUPLEX SIGNALING, LINE PARITY CHECKING,  
A PAGE EJECT MECHANISM, AND SEVERAL BUTTONS AND  
LIGHTS TO CONTROL AND REPORT CONSOLE STATUS. THE  
STAND-ALONE JOSS SOFTWARE CONSISTS OF THE JOSS  
LANGUAGE INTERPRETER AND ITS ARITHMETIC SUBROUTINES.  
A MONITOR FOR USER SCHEDULING AND RESOURCE  
ALLOCATION, AND I/O ROUTINES FOR THE DISC, DRUM,  
CONSOLES, AND OTHER PERIPHERAL DEVICES. JOSS  
SERVICE IS CURRENTLY AVAILABLE TO NEARLY 500 USERS  
THROUGH 34 CONSOLES, SIX OF WHICH ARE REMOTE TO  
RAND OPERATING OVER BOTH PRIVATE AND DATAPHONE  
LINES. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-645 Z94 9/2 12/2 5/1  
CARNEGIE INST OF TECH PITTSBURG PA COMPUTATION CENTER  
COMPUTER SCIENCE RESEARCH REVIEW. (U)  
DESCRIPTIVE NOTE: ANNUAL REPT.,  
66 73P NISSESON, JOYCE I  
CONTRACT: SD-146  
MONITOR: AFOSR 67-0252

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS,  
REVIEWS), MANAGEMENT ENGINEERING, GAME THEORY,  
SIMULATION, ALGORITHMS, TIME SHARING,  
COMPUTERS, DESIGN, PROBLEM SOLVING (U)  
IDENTIFIERS: COMPUTATION SCIENCE, COMPUTATION  
CENTERS (U)

CONTENTS: INTRODUCTION; MANAGING A  
COMPUTATION CENTER BY DAVID H. NICKERSON;  
DIRECTOR'S ON THE REPRESENTATIONS OF PROBLEMS  
BY DR. ALLEN NEWELL; THE SYNTHESIS OF  
ALGORITHMIC SYSTEMS BY DR. ALAN J. PERLIS,  
HEAD DEPARTMENT OF COMPUTER SCIENCE;  
REFLECTIONS ON TIME SHARING FROM A USER'S  
POINT OF VIEW BY DR. HERBERT SIMON, R. K.  
HELLON PROFESSOR OF COMPUTER SCIENCES AND  
PSYCHOLOGY; GENERALITY IN COMPUTER DESIGN BY  
JESSE T. QUATSE, MANAGER, ENGINEERING  
DEVELOPMENT; LISTING OF FACULTY; LISTING OF  
GRADUATE STUDENTS; LISTING OF STAFF  
ADMINISTRATORS; LISTING OF PUBLICATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-647 196 5/2 9/2  
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF  
ELECTRICAL ENGINEERING  
DESIGN PRINCIPLES FOR AN ON-LINE INFORMATION  
RETRIEVAL SYSTEM. (U)  
DESCRIPTIVE NOTE: TECHNICAL REP.  
DEC 66 136P LOWE, THOMAS C. I  
REPT. NO. 67-14  
CONTRACT: AF 49(638)-1421, DA-31-124-AR01D-362  
PROJ: AF-9769  
TASK: 976901  
MONITOR: AFOSR 67-0423

UNCLASSIFIED REPORT

DESCRIPTORS: (INFORMATION RETRIEVAL; DESIGN);  
DECODING, COMPUTER STORAGE DEVICES, REAL TIME,  
DATA, MAN-MACHINE SYSTEMS, DATA STORAGE SYSTEMS,  
COMPUTER OPERATORS, TYPEWRITERS (U)  
IDENTIFIERS: ON-LINE SYSTEMS (U)

AREAS INVESTIGATED INCLUDE SLOW MEMORY DATA  
STORAGE, THE PROBLEM OF DECODING FROM AN INDEX TO A  
SLOW MEMORY ADDRESS, THE STRUCTURE OF DATA LISTS AND  
DATA LIST OPERATORS, COMMUNICATIONS BETWEEN THE HUMAN  
USER AND THE SYSTEM, PROCESSING OF RETRIEVAL  
REQUESTS, AND THE USER'S CONTROL OVER THE RETURN OF  
INFORMATION RETRIEVED. LINEAR, LINKED AND INVERTED  
FILE STRUCTURES ARE CONSIDERED. EMPIRICAL DATA  
FROM THE REPOSITORY OF THE ASSOCIATION FOR  
COMPUTING MACHINERY ARE USED FOR ILLUSTRATIVE  
PURPOSES. THESE DATA ARE ALSO USED IN THE PORTION  
OF THE DECODING MECHANISM STUDY WHICH DEALS WITH THE  
EFFECTS OF TRUNCATION OF INDEX TERMS. FOLLOWING  
THE FILE ORGANIZATION STUDY, THE NECESSARY LIST  
STRUCTURES AND LIST OPERATORS ARE DESIGNED. AN  
EDITING LANGUAGE FOR USE BY THE HUMAN OPERATOR IN  
COMMUNICATING WITH THE SYSTEM IS SPECIFIED. AS ARE  
REQUIREMENTS FOR THE EXECUTION OF 'BACKGROUND'  
PROGRAMS WHEN A USER'S INFORMATION RETRIEVAL REQUEST  
IS NOT BEING PROCESSED. FINALLY, A SIMPLE SEQUENCE  
OF MAN-MACHINE COMMUNICATIONS WHICH ALLOW THE USER OF  
THE SYSTEM TO SPECIFY WHAT CLASSES OF DATA ARE TO BE  
RETURNED TO HIM IS OUTLINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-647 147 9/2 12/1  
CALIFORNIA UNIV LOS ANGELES DEPT OF ENGINEERING  
THEORY OF QUEUES APPLIED TO TIME-SHARED COMPUTER  
SYSTEMS.

(U)

66 12P KLEINROCK, LEONARD I  
CONTRACT: AF-AFOSR-700-46  
PROJ: AF-9249  
TASK: 9749D1  
MONITOR: AFOSR 67-0736

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN IEEE REGION SIX  
CONFERENCE RECORD 1966.

DESCRIPTORS: (\*TIME SHARING, \*QUEUEING THEORY),  
(\*COMPUTERS, TIME SHARING), DATA PROCESSING  
SYSTEMS, STOCHASTIC PROCESSES, MATHEMATICAL  
MODELS, PROBABILITY, THEOREMS

(U)

TIME-SHARED COMPUTER (OR PROCESSING) FACILITIES  
ARE TREATED AS STOCHASTIC QUEUEING SYSTEMS UNDER  
PRIORITY SERVICE DISCIPLINES AND THE PERFORMANCE  
MEASURE OF THESE SYSTEMS IS TAKEN TO BE THE AVERAGE  
TIME SPENT IN THE SYSTEM. RESULTS ARE PRESENTED  
FOR MODELS IN WHICH TIME-SHARED COMPUTER USAGE IS  
OBTAINED BY GIVING EACH REQUEST A FIXED QUANTUM, Q,  
OF TIME ON THE PROCESSOR; AFTER WHICH THE REQUEST IS  
PLACED AT THE END OF A QUEUE OF OTHER REQUESTS; THE  
QUEUE OF REQUESTS IS CONSTANTLY CYCLED, GIVING EACH  
USER Q SEC ON THE MACHINE PER CYCLE. RESULTS FOR  
THE CASE FOR WHICH Q APPROACHES LIMIT OF 0 (A  
PROCESSOR-SHARED MODEL) ARE THEN PRESENTED. A  
GENERAL TIME-SHARED FACILITY IS THEN CONSIDERED IN  
WHICH PRIORITY GROUPS ARE INTRODUCED.  
SPECIFICALLY, THE P(TH) PRIORITY GROUP IS GIVEN  
G SUB P Q SECONDS IN THE PROCESSOR EACH TIME  
AROUND. LETTING Q APPROACH LIMIT OF 0 WE THEN  
GET RESULTS FOR PRIORITY PROCESSOR-SHARED SYSTEM.  
THESE DISCIPLINES ARE COMPARED TO THE FIRST COME  
FIRST SERVED DISCIPLINES. THE SYSTEMS CONSIDERED  
PROVIDE THE TWO BASIC FEATURES DESIRED IN ANY TIME-  
SHARED SYSTEM, NAMELY, RAPID SERVICE FOR SHORT JOBS,  
AND THE VIRTUAL APPEARANCE OF A (FRACTIONAL  
CAPACITY) PROCESSOR AVAILABLE ON A FULL-TIME BASIS.  
NO CHARGE IS MADE FOR SWAP TIME, THUS PROVIDING  
RESULTS FOR 'IDEAL' SYSTEMS. THE RESULTS HOLD ONLY  
FOR POISSON ARRIVALS AND GEOMETRIC (OR  
EXPONENTIAL) SERVICE TIME DISTRIBUTIONS.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-650 500 6/4 9/2  
RAND CORP SANTA MONICA CALIF  
ON-LINE COMPUTER CLASSIFICATION OF HANDPRINTED  
CHINESE CHARACTERS AS A TRANSLATION AID (U)  
APR 67 20P GROHNER, G., F. THEAPNER, JR.  
F. IROBINSON, T. W. I  
REPT. NO. P-3566

UNCLASSIFIED REPORT

DESCRIPTORS: (+CHARACTER RECOGNITION, +CHINESE  
LANGUAGE), COMPUTERS, COMPUTER PROGRAMS,  
PRINTING, CLASSIFICATION, CATHODE RAY TUBES,  
PATTERN RECOGNITION, FEASIBILITY STUDIES, INPUT-  
OUTPUT DEVICES

IDENTIFIERS: ON-LINE SYSTEMS, WRITING (U)

IT IS USUALLY A LONG AND ARDUOUS TASK TO FIND  
CHINESE CHARACTERS IN A DICTIONARY BECAUSE THE  
CHARACTERS HAVE NO NATURAL ORDERING. IN ORDER TO  
DEMONSTRATE THE FEASIBILITY OF AUTOMATING THIS  
PROCEDURE, A COMPUTER PROGRAM WAS DEVELOPED FOR  
CATALOGING AND RETRIEVING RELATED GROUPS OF CHINESE  
CHARACTERS. THE PROGRAM IS WRITTEN IN IBM 360  
ASSEMBLY LANGUAGE AND RUNS ON AN IBM 360/  
MODEL 40. IT MAKES USE OF MUCH OF THE SOFTWARE  
AND TECHNIQUES DEVELOPED FOR THE GRAIL PROJECT.  
THE INPUT DEVICE IS A TABLET; THE OUTPUT DEVICE IS  
A HIGH-PERFORMANCE CATHODE RAY TUBE (CRT) DISPLAY.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-650 847 9/2  
RAND CORP SANTA MONICA CALIF  
SYSTEM IMPLICATIONS OF INFORMATION PRIVACY, (U)  
APR 67 43P PETERSEN,H. E. TURN,R. I  
REPT. NO. P-3504

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT SPRING  
JOINT COMPUTER CONFERENCE, ATLANTIC CITY, N.  
J. 17-19 APR 1967.

DESCRIPTORS: (+COMPUTERS, CONTROL SYSTEMS),  
TIME SHARING, REMOTE CONTROL SYSTEMS,  
PROTECTION, COUNTERMEASURES, VULNERABILITY (U)

VARIOUS QUESTIONS OF PROVIDING INFORMATION PRIVACY  
FOR REMOTELY ACCESSIBLE ON-LINE, TIME-SHARED  
INFORMATION SYSTEMS ARE EXPLORED. SUCH SYSTEMS,  
ESPECIALLY THE REMOTE TERMINALS AND THE COMMUNICATION  
NETWORK, ARE VULNERABLE TO THREATS TO PRIVACY RANGING  
FROM ACCIDENTAL DUMPING OF INFORMATION AS A RESULT OF  
HARDWARE OR SOFTWARE FAILURES TO DELIBERATE  
PENETRATION USING SOPHISTICATED EQUIPMENT.  
DELIBERATE ATTACKS ARE TO BE EXPECTED SINCE PAYOFF  
FROM OBTAINED, ALTERED, OR ERASED INFORMATION COULD  
BE HIGH. THE RESOURCES REQUIRED VARY FROM THE COST  
OF A TAPE RECORDER TO A LARGE INVESTMENT IN EQUIPMENT  
AND KNOW-HOW. THE PROTECTIVE TECHNIQUES DISCUSSED  
IN THIS PAPER INCLUDE: SHIELDING TO REDUCE ELECTRO-  
MAGNETIC EMANATIONS; USE OF ONCE-ONLY PASSWORDS FOR  
ACCESS CONTROL; APPLICATION OF PRIVACY  
TRANSFORMATIONS TO CONCEAL INFORMATION IN USER-  
PROCESSOR COMMUNICATIONS AND IN DATA FILES; RECORDING  
OF ATTEMPTED PENETRATIONS; AND SYSTEMATIC  
VERIFICATION OF THE HARDWARE AND SOFTWARE INTEGRITY.  
IT APPEARS POSSIBLE TO ENGINEER VARIOUS PRIVACY  
PROTECTION TECHNIQUES INTO INFORMATION SYSTEMS SO  
THAT THE COST OF PROTECTION IS PROPORTIONAL TO THE  
AMOUNT RECEIVED, AND IS BORNE LARGELY BY THOSE USERS  
WHO DESIRE PRIVACY FOR THEIR COMMUNICATIONS AND/OR  
FILES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-651 707 9/2  
NAVAL RESEARCH LAB WASHINGTON D C  
MULTIPROCESSOR OPERATING SYSTEMS, (U)  
APR 67 33P WALD,BRUCE I  
REPT. NO. NRL-6531  
PROJ: RF-001-08-41-4552

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TIME SHARING, STATE-OF-THE-ART REVIEWS), (\*DATA PROCESSING SYSTEMS, OPTIMIZATION), (\*MULTIPLE OPERATION, COMPUTERS), PROGRAMMING(COMPUTERS), HISTORY, MONTE CARLO METHOD, DIGITAL COMPUTERS, THESES, SCHEDULING, BIBLIOGRAPHIES

IDENTIFIERS: MULTIPROCESSING, (U)  
MULTIPROGRAMMING (U)

THE HISTORY AND PRESENT STATUS (1965) OF MULTIPROCESSING, MULTIPROGRAMMING, AND TIMESHARING ARE REVIEWED. IT IS CONCLUDED THAT, DESPITE THEIR DIVERSE HISTORIES, THESE TECHNIQUES ARE DESTINED TO BE INTERTWINED. ALTHOUGH THE MECHANICAL PROBLEMS IN OPERATING SYSTEMS THAT EXPLOIT THESE TECHNIQUES HAVE LARGELY BEEN SOLVED AND THE DIFFICULT MEMORY ALLOCATION PROBLEM IS ON THE BRINK OF SOLUTION, THE IMPORTANT QUESTION OF OPTIMUM OPERATING SYSTEM STRATEGY IN INITIATING, SUSPENDING, AND TERMINATING JOBS IS LARGELY UNEXPLORED. SUGGESTIONS ARE MADE CONCERNING MODELS WHICH MIGHT BE SUITABLE FOR BOTH ANALYTIC AND MONTE-CARLO APPROACHES TO THE OPTIMIZATION OF OPERATING SYSTEM STRATEGY AND TO THE SELECTION OF OPTIMUM HARDWARE MIXES. AN EXTENSIVE BIBLIOGRAPHY IS INCLUDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 142 9/2 17/2 5/1  
ARMY ELECTRONICS COMMAND FORT MONMOUTH N J  
INTRODUCTION TO EXTENDED, TIME-SHARED PROCESSOR  
SYSTEMS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
FEB 67 20P DUNN, ROBERT M. I  
REPT. NO. ECOM-2806  
PROJ: DA-1E6-20501-A485  
TASK: 1E6-2501-A485-01

UNCLASSIFIED REPORT

DESCRIPTORS: (TIME SHARING, DATA PROCESSING  
SYSTEMS), MOTIVATION, COMMUNICATION SYSTEMS,

(U)

DATA STORAGE SYSTEMS, MANAGEMENT PLANNING

(U)

IDENTIFIERS: MULTIPROCESSING

THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS  
MOTIVATED AND DEFINED. THE PURPOSE OF THE  
DISCUSSION IS TO CHARACTERIZE AND EVALUATE THIS  
CONCEPT. IN THE COURSE OF THE DISCUSSION, CURRENT  
TIME-SHARED SYSTEMS, THEIR CHARACTERISTICS, SOME OF  
THEIR TECHNICAL IMPLICATIONS, AND SOME OF THEIR  
PROBLEMS ARE REVIEWED. THE REVIEW YIELDS  
IMPLICATIONS AS TO THE ESSENTIAL CHARACTERISTICS OF  
THE EXTENDED, TIME-SHARED PROCESSOR SYSTEM. THE  
DISCUSSION ENDS WITH THE CONCLUSION THAT THE  
EXTENDED, TIME-SHARED PROCESSOR SYSTEM IS A LIMITED  
INSTANCE OF A MORE GENERALIZED SET OF ADAPTIVE,  
PARALLEL PROCESSOR SYSTEMS WHICH SEEK TO  
AUTOMATICALLY AND DYNAMICALLY DISTRIBUTE THEIR LOAD  
THROUGHOUT THE PROCESSOR NETWORK. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-653 465 9/2 9/5 12/2  
PENNSYLVANIA UNIV PHILADELPHIA MOORE SCHOOL OF  
ELECTRICAL ENGINEERING  
THE INPUT/OUTPUT AND CONTROL SYSTEM OF THE MOORE  
SCHOOL PROBLEM SOLVING FACILITY. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUN 67 150P MORTON,RICHARD P. ;  
WOLFBURG,MICHAEL S. ;  
REPT. NO. 67-30  
CONTRACT: NONR~551(40)

UNCLASSIFIED REPORT

DESCRIPTORS: (+TELETYPE SYSTEMS, +INPUT-OUTPUT  
DEVICES), (+PROBLEM SOLVING, DIGITAL  
COMPUTERS), INFORMATION RETRIEVAL, REAL TIME,  
INTERACTIONS, PROGRAMMING(COMPUTERS),  
SCHEDULING, REMOTE CONTROL SYSTEMS, MANAGEMENT  
ENGINEERING, COMPUTER PROGRAMS, CODING,  
INSTRUCTION MANUALS, DOCUMENTATION,  
BIBLIOGRAPHIES, GRAPHICS, PICTURES,  
PROCESSING (U)

THE REPORT DOCUMENTS THE EFFORT WHICH HAS TO DATE  
GONE INTO PROVIDING THE ON-LINE, REAL-TIME CAPABILITY  
NEEDED FOR THE MOORE SCHOOL PROBLEM SOLVING  
FACILITY. THE FACILITIES DESCRIBED ALLOW A USER AT  
A REMOTE TERMINAL TO PREPARE INPUT, EXECUTE PROGRAMS  
ON A COMPUTER AND EXAMINE HIS OUTPUT. THE PROGRAMS  
DESCRIBED ARE RESPONSIBLE FOR CONTROLLING THIS  
PROCESS BY TRANSMITTING AND BUFFERING THE DATA TO AND  
FROM THE COMPUTER, TRANSLATING BETWEEN EXTERNAL AND  
INTERNAL CODES, AND SCHEDULING THE COMPUTERS' EFFORTS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 624 9/2 5/1  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
EXPERIMENTAL INVESTIGATION OF USER PERFORMANCE IN  
TIME-SHARED COMPUTING SYSTEMS: RETROSPECT, PROSPECT,  
AND THE PUBLIC INTEREST. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
MAY 67 10SP SACKMAN,H. I  
REPT. NO. SP-2046  
CONTRACT: F19628-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (+TIME SHARING, DATA PROCESSING  
SYSTEMS), (+DATA PROCESSING SYSTEMS,  
PERFORMANCE(HUMAN)), MAN-MACHINE SYSTEMS,  
MANAGEMENT PLANNING, PREDICTIONS, PROBLEM  
SOLVING, REVIEWS, HUMAN ENGINEERING, REAL TIME,  
STATISTICAL ANALYSIS (U)  
IDENTIFIERS: EVALUATION, ON-LINE SYSTEMS, OFF-  
LINE SYSTEMS (U)

THIS STUDY WAS CONDUCTED TO SURVEY THE FIELD OF  
USER STUDIES IN TIME-SHARING, AND TO DEVELOP A  
CONCEPTUAL FRAMEWORK FOR COOPERATIVE, LONG-RANGE  
APPLIED RESEARCH IN THIS AREA--ULTIMATELY TO SERVE  
THE PUBLIC INTEREST IN THE DEVELOPMENT OF THE  
COMPUTER UTILITY. THE INTRODUCTION TRACES THE  
HISTORICAL ROOTS OF USER PROBLEMS AND DEVELOPS THE  
NEED FOR EXPERIMENTAL STUDIES OF USER PERFORMANCE IN  
TIME-SHARING SYSTEMS. THE LITERATURE REVIEW  
REVEALS A LARGE AND GROWING EXPERIMENTAL LAG BETWEEN  
THE EXTENSION OF INFORMATION SERVICES AND VERIFIED  
KNOWLEDGE OF USER PERFORMANCE. A CONCEPTUAL  
FRAMEWORK FOR USER STUDIES IN TIME-SHARING IS  
CONSTRUCTED FOLLOWING THREE BASIC STEPS. THE FIRST  
DEFINES THIS FIELD OF INQUIRY. THE DEFINITION  
ESSENTIALLY PORTRAYS THIS AREA AS EXPERIMENTALLY  
DERIVED TECHNIQUES AND FINDINGS COMPRISING THE SHARED  
AND VERIFIED EXPERIENCES OF THE USER COMMUNITY.  
THE SECOND STEP BUILDS AN EVOLUTIONARY SYSTEMS  
FRAMEWORK FOR USER STUDIES, ENCOMPASSING THE DESIGN,  
DEVELOPMENT AND OPERATION OF USER SYSTEMS, AND  
RELATING TIME-SHARED USER SYSTEMS TO OTHER TYPES OF  
COMPUTER-AIDED SYSTEMS. THE LAST IS A  
CLASSIFICATION OF USER PROBLEMS INTO FOUR BROAD  
AREAS--METHODOLOGICAL, NORMATIVE, BEHAVIORAL, AND  
SOCIAL EFFECTIVENESS. NUMEROUS PROBLEMS,  
HYPOTHESES AND RECOMMENDATIONS FOR EXPERIMENTAL  
INVESTIGATION OF USER PERFORMANCE ARE MADE FOR EACH  
OF THESE FOUR CATEGORIES. THE STUDY CONCLUDES WITH  
A PLEA FOR INTERDISCIPLINARY APPLIED RESEARCH TO MEET (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 678 9/2 15/7 17/2  
RAND CORP SANTA MONICA CALIF  
USE OF MULTIPLE ON-LINE, TIME-SHARED COMPUTER  
CONSOLES IN SIMULATION AND GAMING, (U)  
JUN 67 63P NORTHROP, G. M. I  
REPT. NO. P-3606

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT  
SYMPOSIUM ON NATIONAL GAMING COUNCIL, WASHINGTON,  
D. C. 8-9 JUN 1967.

DESCRIPTORS: (+WAR GAMES, SIMULATION), (+DATA  
PROCESSING SYSTEMS, \*SIMULATION), TIME SHARING,  
CONTROL SYSTEMS, PROGRAMMING(COMPUTERS),  
REAL TIME, COMMUNICATION SYSTEMS, PROGRAMMING  
LANGUAGES (U)

IDENTIFIERS: ON-LINE SYSTEMS, JOSS (U)

SOME PRESENT-DAY ON-LINE, TIME-SHARED, MULTIPLE-  
CONSOLE COMPUTER SYSTEMS PROVIDE FOR USE OF A COMMON  
FILE SYSTEM. ONE CONSOLE CAN FILE A MESSAGE  
(I.E., 'INFORMATION') WHICH CAN BE RECALLED BY  
ANOTHER CONSOLE. BY PROGRAMMING CONSOLES TO  
PERIODICALLY INTERROGATE CERTAIN FILES, A CRUDE, BUT  
HIGHLY SERVICEABLE, STORE-AND-FORWARD COMMUNICATION  
SYSTEM CAN BE CREATED AND LARGE NUMBERS OF ON-LINE,  
TIME-SHARED COMPUTER CONSOLES CAN BE USED TO ENTER,  
RECALL, PROCESS, AND DISPLAY INFORMATION TYPICAL OF  
THAT USED IN COMMAND AND CONTROL SYSTEMS AND THE PLAY  
OF GAMES. THE RAND CORPORATION'S JOSS SYSTEM  
PROVIDES THE CAPABILITY DESCRIBED. IN ADDITION TO  
ITS USE FOR THE SOLUTION OF SCIENTIFIC PROBLEMS, IT  
IS PRESENTLY BEING EMPLOYED TO SIMULATE IN REAL TIME  
ELEMENTS OF AN AUTOMATED TACTICAL AIR CONTROL SYSTEM  
AND IN THE PLAY OF TACTICAL GAMES AND GAMES OF GLOBAL  
STRATEGY. THE SIMPLE, EASY-TO-LEARN PROGRAMMING  
LANGUAGE MAKES FEASIBLE CONSIDERABLE EXPERIMENTATION  
WITH SCHEDULING ALGORITHMS, DECISION RULES, ETC.  
THIS PAPER DESCRIBES THE BASIC FEATURES OF THE  
USE OF MULTIPLE JOSS CONSOLES IN SIMULATION AND  
GAMING AND DISCUSSES SOME OF THE ADVANTAGES,  
LIMITATIONS, AND LESSONS LEARNED TO DATE.

(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-654 744 9/2 17/2 5/2  
COMRESS INC WASHINGTON D C  
PROPOSED SYSTEM CONCEPT FOR REAL-TIME PROCESSING OF  
AUTODIN MESSAGES. (U)  
MAY 67 48P  
CONTRACT: F19620-67-C-0259  
MONITOR: ESD TR-67-294

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, REAL TIME), (\*INFORMATION RETRIEVAL, DATA TRANSMISSION SYSTEMS), COMMAND + CONTROL SYSTEMS, MAN-MACHINE SYSTEMS, DECISION MAKING (U)

THE REPORT IS THE PROPOSED SYSTEM CONCEPT FOR THE REAL-TIME PROCESSING OF AUTODIN MESSAGES AT THE DATA SERVICES CENTER, HQ USAF. THE DESCRIPTION OF THE PRESENT SYSTEM EMPHASIZES THE BATCH PROCESSING NATURE OF THE PRESENT COMPUTER PROGRAMS, AND THEIR INTERRELATIONSHIPS WITH EACH OTHER AND WITH THE MANUAL RCS CONTROL SYSTEM. THE PROBLEMS THAT CHARACTERIZE THE PRESENT SYSTEM ARE PRINCIPALLY THOSE OF THE TIME THAT ELAPSES BETWEEN RECEIPT OF A MESSAGE ON THE AUTODIN TERMINAL AND THE IDENTIFICATION OF ERRORS THAT INVALIDATE THE MESSAGE AND REQUIRE FURTHER CONTACT WITH THE ORIGINATOR. THE MANUAL RCS CONTROL FILE WAS IDENTIFIED AS BEING ONE OF THE MAJOR ELEMENTS OF THIS TIME LAPSE BECAUSE OF THE PERIODIC MANUAL TRANSCRIPTION OF INCOMING MESSAGES TO HANDWRITTEN CONTROL CARDS. THE PROPOSED SYSTEM EMPHASIZES THE DESIRABILITY OF PERFORMING DATA EDITS IMMEDIATELY UPON RECEIPT OF EACH MESSAGE AND THE INSTANTANEOUS TRANSMISSION OF AN ERROR MESSAGE TO THE ORIGINATOR WHEN THE INCOMING MESSAGE HAS FAILED A FORMAT EDIT. THE REAL-TIME CONCEPT IS ALSO THE MAIN ELEMENT OF MANAGEMENT CONTROL THROUGH THE COMMAND AND QUERY TERMINAL THAT PROVIDES ON-LINE MANAGEMENT DECISION-MAKING ABILITY WITHOUT SACRIFICING ANY OF THE ADVANTAGES OF THE COMPUTER-CONTROLLED REAL-TIME SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-655 300 9/2  
CARNEGIE INST OF TECH PITTSBURGH PA  
TIME SHARED COMPUTERS,  
MAY 67 95P BELL,C. GORDON I  
CONTRACT: SD-146 (U)  
PROJ: 9718, C154501R  
MONITOR: AFOSH 67-1618

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (+TIME SHARING, DATA PROCESSING SYSTEMS), REAL TIME, AUTOMATION, SCHEDULING, ALGORITHMS, PROGRAMMING(COMPUTERS) (U)

IDENTIFIERS: MULTIPROGRAMMING, COMPUTER HARDWARE, COMPUTER SOFTWARE (U)

TIME-SHARING IS DISCUSSED GENERALLY TO INCLUDE ANY APPLICATION OF A COMPUTER SYSTEM WHICH HAS SIMULTANEOUS USERS. THE DISCUSSION EMPHASIZES THE GENERAL PURPOSE TIME-SHARING, SINCE SPECIAL PURPOSE TIME-SHARING, 'REAL TIME', AND 'ON LINE' SYSTEMS ARE A SUBSET. 'GRACEFUL CREATION', OR THE 'BOOT STRAPPING' OF A SYSTEM, IS DESCRIBED IN WHICH NEWLY CREATED INDIVIDUAL USER PROCEDURES ARE IMMEDIATELY AVAILABLE TO THE WHOLE COMMUNITY OF USERS, AND THE SYSTEM EXPANDS IN AN OPEN-ENDED FASHION BECAUSE MANY USERS CONTRIBUTE TO THE FORMATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-665 642 9/2 14/5  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS  
A GENERAL PURPOSE VIDEO INPUT DEVICE FOR A DIGITAL COMPUTER. (U)  
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT.,  
JUL 67 48P STROLLO, THEODORE R. I  
TEITELMAN, WARREN I  
REPT. NO. BBN-1637  
CONTRACT: N0NH-4760(00)  
PROJ: RR-003-10-02

UNCLASSIFIED REPORT

DESCRIPTORS: (+INPUT-OUTPUT DEVICES, DIGITAL COMPUTERS), (+CHARACTER RECOGNITION, DATA PROCESSING SYSTEMS), REAL TIME, TIME SHARING, PATTERN RECOGNITION, DATA STORAGE SYSTEMS, CAMERAS

IDENTIFIERS: IMAGE DISSECTOR CAMERA SYSTEM (U) (U)

A GENERAL PURPOSE VIDEO INPUT DEVICE WAS ACQUIRED AND INTERFACED TO A DIGITAL COMPUTER. TIME-SHARED ACCESS TO THIS DEVICE WAS PROVIDED IN REAL-TIME. THE DEVICE WAS THEN USED TO PROVIDE INPUT FOR A HAND WRITTEN CHARACTER RECOGNITION SCHEME. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-455 978 5/10 9/2  
WESTERN AUSTRALIA UNIV NEOLANDS DEPT OF PSYCHOLOGY  
A COMPUTER-LINKED RUNWAY FOR REAL TIME  
OPERATION,  
67 4P NICHOLLS, JAN G. I (U)  
CONTRACT: AF-AFOSR-960-45  
PROJ: AF-9778  
TASK: 977801  
MONITOR: AFOSR 67-1251

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN PSYCHON SCI V7 N9  
P319-20 1967.

**DESCRIPTORS:** (+PSYCHOMETRICS, DATA PROCESSING SYSTEMS), (+TIME SHARING, EXPERIMENTAL DESIGN), REAL TIME, COSTS, INPUT-OUTPUT DEVICES, COMPUTER PROGRAMS, RATS, RUNWAYS, VELOCITY, RELIABILITY  
**IDENTIFIERS:** ON-LINE SYSTEMS

THE PAPER OUTLINES A SYSTEM FOR RECORDING THE  
RUNNING TIMES OF RATS IN A STRAIGHT RUNWAY USING A  
TIME-SHARED COMPUTER. A DESCRIPTION IS GIVEN OF  
THE HARDWARE AND SOFTWARE USED, AND THE ADVANTAGES OF  
THE SYSTEM ARE DISCUSSED. (AUTHOR) [1]

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. AU0396

AD-657 783 9/2 17/2  
CARNEGIE INST OF TECH PITTSBURGH PA DEPT OF COMPUTER  
SCIENCE  
TOWARD ECONOMICAL REMOTE COMPUTER ACCESS, (U)  
JUL 67 10P GOLD, MICHAEL M. I  
SELWYN, LEE L. I  
CONTRACT: SD-146, NONR-4102(01)  
PROJ: AF-9710  
MONITOR: AFOSR 67-2010

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, +REMOTE CONTROL  
SYSTEMS), (+TIME SHARING, ECONOMICS),  
(+COMMUNICATION SYSTEMS, TIME SHARING), COSTS,  
TELETYPE SYSTEMS, TELEPHONE COMMUNICATION SYSTEMS,  
EFFICIENCY (U)

IDENTIFIERS: ON-LINE SYSTEMS (U)

THE COMMUNICATIONS SERVICES AVAILABLE TO A USER  
REMOTELY ACCESSING A TIME-SHARED COMPUTER SYSTEM ARE  
CONSIDERED IN LIGHT OF THE REQUIREMENTS OF SUCH  
USAGE. WHILE TIME-SHARED SYSTEMS ARE DESIGNED TO  
PROVIDE THE COMPUTER USER WITH THE OPPORTUNITY TO  
WORK AT HIS MOST ADVANTAGEOUS SPEED AND INTERACT WITH  
THE COMPUTER AT HIS CONVENIENCE, AVAILABLE  
COMMUNICATIONS SERVICES HAVE NOT AS YET BEEN DESIGNED  
FOR EFFICIENT AND ECONOMIC TIME-SHARING COMPUTER  
USAGE. A PLAN IS SUGGESTED WHICH WOULD SHARE  
COMMUNICATION FACILITIES AMONG MANY USERS; EACH USER  
ACCESSING THE FACILITY FOR BRIEF PERIODS OF TIME.  
ALTHOUGH PRESENT TECHNOLOGY WOULD ALLOW A GROUP OF  
USERS TO CONSTRUCT A SHARED-CARRIER OPERATION BY  
LEASING CONVENTIONAL CIRCUITS FROM THE COMMON  
CARRIERS, IT IS SUGGESTED THAT THE COMMON CARRIERS  
OFFER A SHARING SERVICE, CHARGING FOR COMMUNICATIONS  
BY THE AMOUNT OF INFORMATION TRANSMITTED RATHER THAN  
THE TIME THE CIRCUIT IS OPEN. UNLESS SUCH A SYSTEM  
IS IMPLEMENTED, THE FULL ECONOMIC ADVANTAGES OF TIME-  
SHARING CANNOT BE ATTAINED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-650 477 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
THE SDC TIME-SHARING SYSTEM REVISITED. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
AUG 67 30P SCHWARTZ,JULES I.  
WEISSMAN,CLARK I  
REPT. NO. SP-2874

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 NATIONAL ACM  
CONFERENCE, WASHINGTON, D. C., 29-31 AUGUST  
1967.

DESCRIPTORS: (+TIME SHARING, REVIEWS), (+DATA  
PROCESSING SYSTEMS, TIME SHARING), PREDICTIONS,  
COMPUTER STORAGE DEVICES, INPUT-OUTPUT DEVICES,  
PROGRAMMING LANGUAGES, MANAGEMENT PLANNING,  
COSTS, FLOW CHARTING, MAGNETIC CORE STORAGE,  
EFFICIENCY, MAINTENANCE (U)  
IDENTIFIERS: ON-LINE SYSTEMS, LISP, LIST  
PROCESSING (U)

THE SDC TIME-SHARING SYSTEM (TSS), WHICH  
OPERATES ON AN IBM AN/FSQ-32 COMPUTER AT SYSTEM  
DEVELOPMENT CORPORATION, SANTA MONICA, WAS  
ORIGINALLY DESCRIBED IN A PAPER ENTITLED 'A  
GENERAL-PURPOSE TIME-SHARING SYSTEM,'  
PUBLISHED IN 1964. TSS HAS NOW BEEN IN OPERATIONAL  
USE FOR FOUR YEARS, SERVING A LARGE AND VARIED  
COMMUNITY OF LOCAL AND REMOTE USERS. THIS PAPER  
DESCRIBES THE PRESENT CAPABILITIES OF TSS,  
DISCUSSES THE CRITICAL PROBLEMS OF RESOURCE  
MANAGEMENT (AND THE SOLUTIONS TO THOSE PROBLEMS  
EMPLOYED IN TSS), AND REVIEWS THE AUTHORS' ORIGINAL  
STATEMENTS REGARDING THE ADVANTAGES OF TIME-SHARING  
FOR SUCH TASKS AS ON-LINE PROGRAMMING AND DEBUGGING.  
THE TECHNIQUES FOR MANAGING CPU TIME, STORAGE  
MEDIA, AND USER/SYSTEM INTERACTION ARE DESCRIBED IN  
SOME DETAIL. AN ATTEMPT IS MADE TO POINT OUT THE  
WEAK AS WELL AS THE STRONG POINTS OF TSS, AND TO  
INDICATE SOME OF THE EFFECTS THAT SYSTEMS SUCH AS  
TSS HAVE HAD UPON COMPUTING TECHNOLOGY.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 362 9/2  
RAND CORP SANTA MONICA CALIF  
JOSS; 20,000 HOURS AT THE CONSOLE--A STATISTICAL  
SUMMARY,  
AUG 67 43P BRYAN, G. E. I (U)  
REPT. NO. RM-5359-PH  
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (+SPECIAL PURPOSE COMPUTERS, +INPUT-  
OUTPUT DEVICES), MAN-MACHINE SYSTEMS, MONITORS,  
TIME SHARING, PROBLEM SOLVING, INTERACTIONS,  
SCHEDULING, COMPUTER STORAGE DEVICES.

TYPEWRITERS  
IDENTIFIERS: JOSS (U)

RESULTS OF THE FIRST YEAR OF JOSS OPERATION ON  
THE DIGITAL EQUIPMENT CORPORATION PDP-6.  
THE GATHERING OF DATA FOR REVENUE ACCOUNTING AND  
FOR PRODUCING PERFORMANCE MEASURES OF THE JOSS  
SYSTEM AND ITS USERS IS A MAJOR FUNCTION OF THE  
MONITOR, THE SYSTEM'S SUPERVISORY UNIT. AS  
GENERATED BY THE INSTRUMENTING PROGRAMS, STATISTICS  
ON USAGE INDICATE THAT OVER 700 INDIVIDUALS MAKE USE  
OF JOSS SERVICE. EVERY MONTH 400 DIFFERENT USERS  
GENERATE OVER 200 SESSIONS EACH DAY. TYPICAL USER  
SESSIONS LAST 45 MINUTES AND AVERAGE 4 MINUTES OF  
COMPUTING TIME, ALTHOUGH 50 PERCENT LAST LESS THAN 7  
SECONDS. DURING AN AVERAGE SESSION, 16,000 JOSS  
STATEMENTS ARE EXECUTED, AND 68,000 ARITHMETIC  
OPERATIONS ARE PERFORMED. JOSS USER REQUESTS ARE  
SUBSTANTIALLY DIFFERENT FROM THOSE MADE ON OTHER  
TIME-SHARED SYSTEMS: THERE ARE A RELATIVELY LARGE  
NUMBER OF REQUESTS FOR SHORT AMOUNTS OF COMPUTING AND  
A RELATIVELY SMALL NUMBER FOR A LARGE AMOUNT OF  
COMPUTING. THE AMOUNT OF COMPUTING, HOWEVER, IS BY  
NO MEANS TRIVIAL, AS SEEN FROM THE NUMBER OF  
STATEMENTS AND ARITHMETIC OPERATIONS PERFORMED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 733 S/I  
RAND CORP SANTA MONICA CALIF  
DESIGN CONSIDERATIONS FOR CAMCOS, A COMPUTER-  
ASSISTED MAINTENANCE PLANNING AND CONTROL SYSTEM. (U)  
JUL 67 66P DREZNER, S. M. I  
VANHORN, R. L. I  
REPT. NO. RM-5255-PR  
CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (+MAINTENANCE, +CONTROL SYSTEMS),  
(+MANAGEMENT PLANNING, COMPUTERS), SCHEDULING,  
REAL TIME, AIRCRAFT, MONITORS, MAINTENANCE  
PERSONNEL, AIR FORCE, LOGISTICS, DATA STORAGE  
SYSTEMS, INFORMATION RETRIEVAL, JOB ANALYSIS (U)

A DESCRIPTION IS PRESENTED OF CAMCOS, AN ON-LINE, REAL-TIME COMPUTER SYSTEM FOR AIR FORCE BASE-LEVEL MAINTENANCE PLANNING AND CONTROL ACTIVITIES. CAMCOS IS DESIGNED TO PROVIDE A HIGH-LEVEL CAPABILITY FOR CRITICAL MISSIONS AND ECONOMICAL PERFORMANCE DURING ROUTINE OPERATIONS. A MISSION GENERATOR HELPS TO SELECT AN AIRCRAFT TO FULFILL A SORTIE REQUEST, AND SENDS THE DISPATCH NOTICES TO READY IT FOR ITS MISSION. THE SYSTEM HANDLES PLANNING, SCHEDULING, DISPATCHING, AND CONTROL FOR FLIGHT-LINE, BENCH, AND PERIODIC MAINTENANCE ON A UNIFIED BASIS THAT RELATES MAINTENANCE TO OPERATIONAL REQUIREMENTS. THE CURRENT STATUS OF ALL RESOURCES, WORKLOAD, AND AIRCRAFT IS MAINTAINED IN THE SYSTEM. AN EVENT MONITOR FOLLOWS ALL FLIGHT-LINE JOBS AND OTHER CRITICAL TASKS, NOTIFYING THE APPROPRIATE MANAGER IF A DEPARTURE FROM PLAN OCCURS. JOB REQUIREMENTS FOR REPORTED MALFUNCTIONS AND OTHER PRIORITY WORKLOAD ARE MATCHED AGAINST RESOURCES, AND SCHEDULED TO MEET AIRCRAFT RECOVERY TARGETS. PERSONNEL IN MAINTENANCE SQUADRONS REPORT WORK REQUIREMENTS; EVENTS SUCH AS START OF JOB, END OF JOB, ETC. AND CHANGES IN RESOURCE AVAILABILITY THROUGH THE CONTROL SYSTEM. THESE DATA ARE USED FOR PLANNING AND CONTROLLING THE MAINTENANCE ACTIVITY AND ARE SAVED BY THE SYSTEM FOR SUBSEQUENT ANALYSIS AND REPORTING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 734 9/2 5/9  
RAND CORP SANTA MONICA CALIF  
THE JOSS PRIMER,  
AUG 67 46P MARKS,S. L. FARMERDING,G.  
W. I  
REPT. NO. RM-5220-PR  
CONTRACT: F44620-67-C-0045

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (\*SPECIAL PURPOSE COMPUTERS, \*DATA PROCESSING SYSTEMS), (\*INPUT-OUTPUT DEVICES, \*COMPUTER OPERATORS), TIME SHARING, MAN-MACHINE SYSTEMS, INTERACTIONS, TYPEWRITERS, TRAINING, INSTRUCTION MANUALS

(U)

INTRODUCTION TO JOSS, RAND'S TIME-SHARED COMPUTING SYSTEM, FOR THE BEGINNING USER WITH EXAMPLES ILLUSTRATING THE SYSTEM'S BASIC ELEMENTS, WHICH CAN EASILY BE LEARNED WITHOUT PROGRAMMING EXPERIENCE. SEATED AT A MOBILE CONSOLE CONNECTED TO A COMPUTER VIA TELEPHONE LINES, THE PRIMER READER FOLLOWS THE INSTRUCTIONS STEP BY STEP, DUPLICATING EXAMPLES, TRYING VARIATIONS, AND OBSERVING RESULTS. HE TYPES COMMANDS IN IMPERATIVE ENGLISH SENTENCES, INSTRUCTING JOSS TO PERFORM PROCEDURES IN ARITHMETIC, ALGEBRA, TRIGONOMETRY, AND LOGIC. JOSS RESPONDS WITH ANSWERS IN USER-PREScribed FORMATS AND WITH ERROR MESSAGES THAT HELP THE USER CORRECT ERRORS AND RESUME PROCESSING. TO EXTEND THE BEGINNER'S KNOWLEDGE OF JOSS, THE PRIMER CONCLUDES WITH LISTS OF JOSS COMMANDS AND FUNCTIONS AND SUGGESTED READING IN THE JOSS LITERATURE. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-659 810 12/2 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH  
CENTER  
OPERATIONAL ANALYSIS OF A COMPUTATION CENTER. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 67 90P RAYNAUD, THIERRY GABRIEL I  
REPT. NO. TR-32  
CONTRACT: DA-31-124-ARO(D)-209, NQNR-3963(06)  
PROJ: DA-20011501B704, DSR-75217  
MONITOR: AROD 948:47-M

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: MASTER'S THESIS.

DESCRIPTORS: (\*OPERATIONS RESEARCH, \*DIGITAL  
COMPUTERS), (\*TIME SHARING, \*REAL TIME),  
THESSES, DATA PROCESSING SYSTEMS, FLOW CHARTING,  
EFFICIENCY, COSTS, SIMULATION, MANAGEMENT  
ENGINEERING (U)

THE REPORT PRESENTS A PICTURE OF THE M. I. T.  
COMPUTATION CENTER WITH EMPHASIS UPON PRESENT  
PERFORMANCE AND ITS SUPERVISION. THE ACTUAL  
CONFIGURATION IS ASSUMED. AFTER A PRESENTATION OF  
THE ORGANIZATIONAL FRAMEWORK, OTHER BATCH-PROCESSING  
OPERATIONS ARE BRIEFLY DISCUSSED (AS A SUMMARY OF  
MANY DIRECT OBSERVATIONS OF THE GENERAL OPERATION OF  
THE CENTER). A DETAILED ANALYSIS OF CERTAIN  
VARIABLES IS MADE FROM DATA ON TIME-SHARING  
OPERATIONS; SYSTEM PARAMETERS; GRADE OF SERVICE;  
AND USER'S BEHAVIOR. SIMULATION IS USED TO GET  
FURTHER KNOWLEDGE OF THE DYNAMIC BEHAVIOR. THREE  
MODELS ARE PRESENTED AND THEY USE AS INPUT THE  
RESULTS OF THE OBSERVATIONS REPORTED IN THE PREVIOUS  
PARTS. THE MODELS REPRESENT THREE DIFFERENT  
STANDPOINTS: REAL-TIME DECISIONS (REACTION TO  
OVERLOAD CONDITIONS); DAY-TO-DAY OPERATIONS  
(RULES FOR BALANCING THE BATCH-PROCESSING LOAD AND  
THE TIME-SHARING LOAD); LONG-TERM STUDY (SEVERAL  
MANAGEMENT ATTITUDES FOR THE NEXT SIX MONTHS INTERIM  
PERIOD ARE STUDIED). (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-660 836

9/2

RAND CORP SANTA MONICA CALIF

JOSS; ASSEMBLY LISTING OF THE SUPERVISOR,

(U)

AUG 67 168P BRYAN, G. E. I

REPT. NO. RH-5437-PR

CONTRACT: F44620-67-C-0045

UNCLASSIFIED REPORT

DESCRIPTORS: (•TIME SHARING, DATA PROCESSING SYSTEMS), (•CONTROL SYSTEMS, DATA PROCESSING SYSTEMS), SCHEDULING, DIGITAL COMPUTERS, CODING, MAN-MACHINE SYSTEMS, INPUT-OUTPUT DEVICES, DATA STORAGE SYSTEMS, REAL TIME IDENTIFIERS: JOSS, ON-LINE SYSTEMS, MAGNETIC DRUM STORAGE

(U)

(U)

THE REPORT GIVES A PRESENTATION OF THE CODE FOR THE MONITOR (SUPERVISOR) UNIT OF JOSS, RAND'S ON-LINE, TIME-SHARED COMPUTER SYSTEM. THIS UNIT, WHICH ACTS AS A SCHEDULING, RESOURCE-ALLOCATING, AND SYNCHRONIZING DEVICE, EXERCISES OVERALL CONTROL OF THE SYSTEM'S OPERATION. IT ENSURES THAT ALL DATA AND HARDWARE NECESSARY FOR A PARTICULAR ACTION ARE SIMULTANEOUSLY AVAILABLE, AND METERS THE OPERATION OF THE SYSTEM TO PROVIDE REVENUE ACCOUNTING INFORMATION AND DATA DESCRIBING SYSTEM PERFORMANCE AND USER OPERATIONS.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 604 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TRACE--MODEL II USER'S GUIDE, TIMESHARED ROUTINES FOR  
ANALYSIS, CLASSIFICATION AND EVALUATION. (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
OCT 67 190P ESADA,RICHARD P. I  
REPT. NO. TM-2621/003/00  
CONTRACT: DAHC15-67-C-0277

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTER PROGRAMS, INSTRUCTION  
MANUALS), (+TIME SHARING, DATA PROCESSING  
SYSTEMS), PROGRAMMING LANGUAGES, SUBROUTINES,  
PROBLEM SOLVING, MAN-MACHINE SYSTEMS

IDENTIFIERS: ON-LINE SYSTEMS, TRACE, JOVIAL (U)

THE DOCUMENT PRESENTS A USER'S DESCRIPTION OF THE  
TRACE SYSTEM, WHICH PROVIDES AN ON-LINE TECHNIQUE  
FOR SCANNING DATA AND DERIVING VARIABLES. IT IS  
DIVIDED INTO TWO MAIN SECTIONS: THE FIRST A  
TUTORIAL GUIDE INTRODUCING THE USER TO THE BASIC  
PRINCIPLES OF THE SYSTEM, AND THE SECOND A REFERENCE  
GUIDE TO THE ENTIRE BODY OF THE TRACE PROGRAM.  
THE USER IS SHOWN HOW TO INITIATE AN INTERACTION  
WITH THE TIME-SHARING SYSTEM, HOW TO EMPLOY EVERY  
CAPABILITY OF TRACE, WHAT ERRORS MAY BE EXPECTED IN  
OPERATION, AND WHAT STATISTICAL PRODUCTS MAY BE  
DERIVED THROUGH USE OF THE PROGRAM. A COMPLETE  
INDEX ALLOWS THE USER TO REFER READILY TO ANY PORTION  
OF THE DOCUMENT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 665 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
TIME-SHARING VERSUS BATCH PROCESSING: THE  
EXPERIMENTAL EVIDENCE. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
OCT 67 43P SACKMAN, H. I  
REPT. NO. SP-2975

UNCLASSIFIED REPORT

DESCRIPTORS: (+TIME SHARING,  
PERFORMANCE(ENGINEERING)), DATA PROCESSING  
SYSTEMS, MAN-MACHINE SYSTEMS, EFFICIENCY, COST  
EFFECTIVENESS, MOTIVATION, REVIEWS (U)  
IDENTIFIERS: ON-LINE SYSTEMS, OFF-LINE SYSTEMS,  
BATCH PROCESSING, EVALUATION (U)

THE CONTINUING CONTROVERSY OVER THE RELATIVE MERITS  
OF TIME-SHARING VERSUS BATCH PROCESSING HAS TAKEN A  
NEW AND SIGNIFICANT TURN FROM PREDISCIPLINARY  
SPECULATION TO APPLIED SCIENTIFIC EXPERIMENTATION.  
WITHIN THE LAST TWO YEARS, FIVE EXPERIMENTAL  
STUDIES HAVE APPEARED IN THE LITERATURE, EACH  
COMPARING SOME FORM OF ONLINE AND OFFLINE DATA  
PROCESSING WITH RESPECT TO MAN-MACHINE MEASURES OF  
SYSTEM PERFORMANCE. THESE FIVE PIONEERING STUDIES  
COMPRIZE THE FIRST SUBSTANTIVE DATA BASE FOR  
COMPARING AND EVALUATING EXPERIMENTAL METHODOLOGY AND  
FINDINGS BEARING ON THE GROWING AND CHANGING  
COMPETITION BETWEEN TIME-SHARING AND BATCH PROCESSING  
SYSTEMS. THIS PAPER PROVIDES A CRITICAL REVIEW OF  
THESE FIVE EXPERIMENTS, SUMMARIZED FINDINGS, PROBLEMS  
AND PITFALLS, AND OFFERS RECOMMENDATIONS FOR FUTURE  
EXPERIMENTAL WORK. (AUTHOR) (U)

UNCLASSIFIED

DDI REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 751 9/2 6/3  
CALIFORNIA UNIV LOS ANGELES BRAIN RESEARCH INST  
A USER-ORIENTED TIME-SHARED ONLINE SYSTEM. (U)  
DESCRIPTIVE NOTE: REVISED ED.,  
FEB 67 7P BETYAR,LASZLO I  
CONTRACT: NONR-233(91), PHS-NB-02501-US

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN COMMUNICATIONS OF THE  
ACM V10 N7 P413-9 1967.  
SUPPLEMENTARY NOTE: REVISION OF MANUSCRIPT RECEIVED JUL  
66. RESEARCH SUPPORTED IN PART BY NASA, GRANT  
NSG-505.

DESCRIPTORS: (\*TIME SHARING, DATA PROCESSING  
SYSTEMS), (\*DIGITAL COMPUTERS, \*BIOLOGY),  
ANALOG-TO-DIGITAL CONVERTERS, INPUT-OUTPUT  
DEVICES, PROGRAMMING LANGUAGES, MAN-MACHINE  
SYSTEMS, DATA STORAGE SYSTEMS (U)  
IDENTIFIERS: LIST PROCESSING, ON-LINE SYSTEMS,  
MULTIPROCESSING (U)

AN EXISTING SYSTEM AND PLANNED ADDITIONS WITHIN THE  
DATA PROCESSING LABORATORY OF THE BRAIN  
RESEARCH INSTITUTE AT UCLA IS DESCRIBED. THE  
SYSTEM REPRESENTS AN ATTEMPT TO PROVIDE RESEARCH  
WORKERS OF THE INSTITUTE WITH THE ABILITY TO  
INTERACT DIRECTLY WITH A HIGHLY SOPHISTICATED DIGITAL  
COMPUTING COMPLEX IN THE MOST DIRECT AND SIMPLE  
FASHION POSSIBLE. IT IS ANTICIPATED THAT, WITH THE  
ACCUMULATION OF EXPERIENCE USING THE PRESENT SYSTEM,  
SIGNIFICANT ADVANCES WILL BE POSSIBLE IN THE SYSTEM  
DESIGN THROUGH DETERMINATION OF INTERFACE PARAMETERS  
BETWEEN THE BIOLOGICAL SCIENTIST AND THE DIGITAL  
COMPUTER. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 007 9/2 6/9  
MASSACHUSETTS INST OF TECH CAMBRIDGE DEPT OF CIVIL  
ENGINEERING  
USE OF CTSS IN A TEACHING ENVIRONMENT. (U)  
NOV 64 35P ROOS,DANIEL I  
REPT. NO. MAC-TR-14  
CONTRACT NONR-4102(01)  
PROJ. NR-048-109, RR-003-09-01

UNCLASSIFIED REPORT

DESCRIPTORS: (+TIME SHARING, +TEACHING  
MACHINES), (+TEACHING METHODS, COMPUTERS),  
RELIABILITY, REAL TIME, STUDENTS, MOTIVATION,  
INPUT-OUTPUT DEVICES,  
PROGRAMMING(COMPUTERS) (U)

IDENTIFIERS: MAC PROJECT, ON-LINE SYSTEMS,  
BATCH PROCESSING, COMPUTER-AIDED INSTRUCTION,  
COMPATIBLE TIME-SHARING SYSTEM (U)

COMPUTER TIME-SHARING OFFERS MANY INTERESTING  
POSSIBILITIES FOR USE IN TEACHING COMPUTER  
TECHNOLOGY. IT MIGHT BE EXPECTED THAT WITH PROPER  
HARDWARE AND SOFTWARE, STUDENTS USING TIME-SHARING AS  
A TEACHING MACHINE COULD ACQUIRE PROFICIENCY IN THE  
FUNDAMENTALS OF PROGRAMMING MORE EASILY THAN USING  
BATCH-PROCESSING. TO TEST THIS HYPOTHESIS, THE  
M.I.T. DEPARTMENT OF CIVIL ENGINEERING  
DIVIDED A FRESHMAN PROGRAMMING CLASS, SO THAT HALF  
THE STUDENTS USED BATCH-PROCESSING METHODS, AND HALF  
USED THE PROJECT MAC TIME-SHARING SYSTEM TO DO  
THE SAME WORK. THE PAPER DESCRIBES THE EXPERIMENT  
AND ITS TENTATIVE RESULTS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 861 9/2 5/1  
TRACOR INC AUSTIN TEX  
DATA MANAGEMENT: A COMPARISON OF SYSTEM  
FEATURES,  
OCT 67 43P ZIEHE, THEODORE W. I (U)  
REPT. NO. TRACOR-67-904-U  
CONTRACT NO 00014-67-C-0396  
PROJ NR-048-239, 007-001-01

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS,  
MANAGEMENT PLANNING), MAN-MACHINE SYSTEMS,  
TIME SHARING, INDEXES, DOCUMENTATION,  
INFORMATION RETRIEVAL, DESIGN (U)  
IDENTIFIERS: DATA MANAGEMENT; ON-LINE SYSTEMS (U)

FEATURES OF FOUR DATA MANAGEMENT SYSTEMS UNDER  
DEVELOPMENT ARE COMPARED. THE FOUR SYSTEMS ARE THE  
TIME-SHARED DATA MANAGEMENT SYSTEM  
(SYSTEM DEVELOPMENT CORPORATION) AND A  
VARIANT OF IT, THE REMOTE FILE MANAGEMENT  
SYSTEM (COMPUTATION CENTER, THE UNIVERSITY  
OF TEXAS); DATA MANAGER - I (AUERBACH  
CORPORATION); THE GENERALIZED INFORMATION  
SYSTEM (IBM); AND THE CATALOG SYSTEM (THE  
RAND CORPORATION). COMPARISONS ARE DRAWN IN  
TWO AREAS: EXTERNAL AND INTERNAL DATA STRUCTURING  
AND ORGANIZATION. SEVERAL DIFFERENCES AMONG THE  
SYSTEMS ARE NOTED AND BRIEFLY DISCUSSED.  
(AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBL. GRAPHY SEARCH CONTROL NO. A00396

AD-661 966 5/2 5/7 9/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
AN APPROACH TO THE ON-LINE INTERROGATION OF  
STRUCTURED FILES OF FACTS USING NATURAL LANGUAGE. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER,  
APR 66 08P KELLOGG,CHARLES H. I  
REPT. NO. SP-2431/000/00  
CONTRACT: AF 19(628)-5166; ARPA ORDER-773

UNCLASSIFIED REPORT

DESCRIPTORS: (+INFORMATION RETRIEVAL,  
+GRAMMARS), (+DATA PROCESSING SYSTEMS,  
PROGRAMMING(COMPUTERS)), (+MAN-MACHINE  
SYSTEMS, GRAMMARS), TIME SHARING, SYNTAX,  
PROBLEM SOLVING, ALGORITHMS, SEMANTICS  
IDENTIFIERS: DATA MANAGEMENT, ON-LINE SYSTEMS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS PRESENTS  
THE COMPUTING COMMUNITY WITH THE NEW AND CHALLENGING  
OPPORTUNITY OF PROVIDING USERS WITH MORE POWERFUL AND  
EFFECTIVE TOOLS FOR PROBLEM SOLVING. FOR EXAMPLE,  
HAVING FACILITIES FOR RAPIDLY ACCESSING LARGE FILES  
OF STORED INFORMATION IMPLIES A CONCOMITANT NEED FOR  
DEVELOPING BETTER METHODS FOR INTERROGATING THE  
CONTENT OF THESE FILES. USER/COMPUTER INTERACTION  
IN FORMULATING PROBLEMS DEPENDS ON SUCH IMPROVEMENTS  
IN COMMUNICATION EFFECTIVENESS AND, CONSEQUENTLY, THE  
COOPERATIVE PROBLEM SOLVING VENTURE ITSELF. ON-  
LINE INTERROGATION OF STRUCTURED FILES IS VALUABLE  
ONLY IN PROPORTION TO A USER'S ABILITY TO GET AT SETS  
OF RELEVANT FACTS, TO PERCEIVE PERTINENT  
RELATIONSHIPS AMONG THESE FACTS, AND TO MANIPULATE,  
REARRANGE, AND COMBINE THEM AS REQUIRED BY THE TASK  
AT HAND. THIS PAPER IS CONCERNED WITH DEVELOPMENT  
OF AN APPROACH AND IMPLEMENTATION OF A VEHICLE TO  
ENABLE USERS TO FORMULATE REQUESTS MORE CONVENIENTLY  
AND TO GAIN ACCESS TO RELEVANT FACTS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-661 983 9/2 14/1  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
AN ANALYTICAL COST COMPARISON OF COMPUTER OPERATING  
SYSTEMS. (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO,  
JUN 67 213P ERIKSON, WARREN J. I  
REPT. NO. TM-3525  
CONTRACT: F19620-67-C-0004

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS,  
PERFORMANCE(ENGINEERING)), (+TIME SHARING,  
PERFORMANCE(ENGINEERING)), (+COST  
EFFECTIVENESS, DATA PROCESSING SYSTEMS),  
MANAGEMENT PLANNING, DECISION MAKING,  
OPTIMIZATION, MATHEMATICAL MODELS, MAINTENANCE,  
PROGRAMMING(COMPUTERS)) (U)  
IDENTIFIERS: BATCH PROCESSING (U)

THE REPORT ATTEMPTS TO ANSWER SOME OF THE QUESTIONS  
CONCERNING THE ADVANTAGES AND DISADVANTAGES OF TIME-  
SHARING. TO ACCOMPLISH THIS, THE GENERAL PROBLEM  
OF EVALUATING COMPUTER SYSTEM PERFORMANCE IS FIRST  
ADDRESSED. GENERAL SYSTEM CHARACTERISTICS ARE  
SPECIFIED THAT INCLUDE THE COMPUTER AND ITS OPERATING  
SYSTEM, AND USERS AND THEIR JOBS. THE MAIN  
EMPHASIS IS PLACED UPON THE OPERATING SYSTEM; THE  
EFFECTS OF HAVING DIFFERENT COMPUTERS, USERS, OR JOBS  
ARE TREATED AS PARAMETERS. THE MOST IMPORTANT  
EVALUATION CRITERION IS CONSIDERED TO BE COST, WHICH  
INCLUDES BOTH USER COST AND COMPUTER SYSTEM COST.  
QUANTITATIVE MODELS ARE DEVELOPED THAT DESCRIBE  
COMPUTER CENTER USERS, THE PROGRAMS THEY RUN, AND THE  
DIFFERENT OPERATING SYSTEMS THEY MIGHT USE. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 027 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
A LOW-COST OUTPUT TERMINAL FOR TIME-SHARED  
COMPUTERS.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
MAR 67 31P ROSENBERG, RONALD C. I  
KENNEDY, DANIEL W. HUMPHREY, ROGER A. I  
REPT. NO. MAC-TR-38  
CONTRACT: NONR-4102(D1)  
PROJ: NR-048-189

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TIME SHARING, INPUT-OUTPUT  
DEVICES), (\*REMOTE CONTROL SYSTEMS, TIME  
SHARING), DIGITAL COMPUTERS, REAL TIME,  
COMMUNICATION SYSTEMS, ANALOG SYSTEMS, DISPLAY  
SYSTEMS, DATA STORAGE SYSTEMS, WIMING  
DIAGRAMS

(U)

IDENTIFIERS: ON-LINE SYSTEMS

(U)

A LOW COST REMOTE TERMINAL WHICH PROVIDES OUTPUT IN  
SWITCH FORM FROM A TIME-SHARED DIGITAL COMPUTER IS  
DESCRIBED. THE TERMINAL CONSISTS OF A MODIFIED  
MODEL 35 KSR TELETYPE AND A LOCAL MEMORY UNIT.  
THE UNIT IS INDEPENDENT OF THE PARTICULAR COMPUTER,  
AND IS EASY TO TEST AND MAINTAIN. THE STATES OF  
THE MEMORY CONTROL AND MEMORY WORDS ARE OBSERVABLE  
DIRECTLY BY INDICATOR LIGHTS. AN APPLICATION OF  
THE MEMORY TO THE AUTOMATIC SET-UP AND CONTROL OF AN  
ANALOG COMPUTATION ARE DISPLAYED ON AN OSCILLOSCOPE;  
THIS MAKES POSSIBLE, FOR EXAMPLE, THE RAPID DISPLAY  
OF TIME RESPONSE OF LINEAR SYSTEMS, UNDER DIGITAL  
PROGRAM CONTROL. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-662 225 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
INCREMENTAL SIMULATION ON A TIME-SHARED  
COMPUTER. (U)  
DESCRIPTIVE NOTE: DOCTORAL THESIS,  
67 253P JONES, MALCOLM M. I  
REF ID: MAC-TR-48  
CONTRACT: NONR-4102(01)  
PROJ: MR-048-189, RR-003-09-01

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TIME SHARING, COMPUTERS),  
(\*SIMULATION, COMPUTERS), PROGRAMMING  
LANGUAGES: REAL TIME, THESES, DISPLAY SYSTEMS (U)  
IDENTIFIERS: ON-LINE SYSTEMS, LIST PROCESSING (U)

THE THESIS DESCRIBES A SYSTEM WHICH ALLOWS  
SIMULATION MODELS TO BE BUILT AND TESTED  
INCREMENTALLY. IT IS CALLED OPS-4 AND IS  
SPECIFICALLY DESIGNED TO OPERATE IN THE ENVIRONMENT  
OF THE MULTICS SYSTEM. IT REPRESENTS A MAJOR  
EXPANSION AND IMPROVEMENT OF THE OPS-3 SYSTEM  
IMPLEMENTED IN CTSS AND ALSO INCLUDES MANY FEATURES  
ADAPTED FROM OTHER CURRENT SIMULATION SYSTEMS. THE  
PL/I LANGUAGE, AUGMENTED BY MANY ADDITIONAL  
STATEMENTS AND NEW DATA OBJECTS, PROVIDES THE BASIS  
FOR DEFINING MODELS IN OPS-4. A LIST OF  
DESIRABLE FEATURES FOR AN INCREMENTAL SIMULATION  
SYSTEM IS PRESENTED AND IT IS SHOWN HOW OPS-4  
INCORPORATES THESE FEATURES, WHEREAS OTHER CURRENT  
SIMULATION SYSTEMS SATISFY ONLY SOME OF THEM AND ARE  
NOT SUITABLE FOR USE IN TIME-SHARED ENVIRONMENT. A  
SIMPLIFIED MODEL OF PAGE AND SEGMENT FAULT HANDLING  
IN MULTICS ILLUSTRATES SOME OF THE FEATURES OPS-4  
PROVIDES TO ALLOW THE USER TO CONTINUOUSLY INTERACT  
WITH A MODEL DURING ITS CONSTRUCTION, TESTING AND  
RUNNING PHASES. IT ALSO ILLUSTRATES HOW THE USER  
HIMSELF MAY PORTRAY PORTIONS OF A MODEL THAT ARE NOT  
YET DEFINED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-663 198 9/2 5/11 5/8  
MASSACHUSETTS INST OF TECH CAMBRIDGE  
THE COMPUTER UTILITY AND THE COMMUNITY. (U)  
67 9P FAND,R. M. I  
CONTRACT: NONR-4102(D1)

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL  
CONVENTION RECORD, PT. 12 P30-7 1967.  
SUPPLEMENTARY NOTE: REPORT ON PROJECT MAC.

DESCRIPTORS: (+COMPUTERS, +SOCIOLOGY), (+TIME  
SHARING, STATE-OF-THE-ART REVIEWS),  
PROGRAMMING(COMPUTERS), MAN-MACHINE SYSTEMS,  
COSTS, MANAGEMENT PLANNING, DATA PROCESSING  
SYSTEMS.

IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM; MAC  
PROJECT, PRIVACY (U)

THE REPORT CONSIDERS THE FOLLOWING TERMS:  
(1) THE STATE OF THE ART IN TIME SHARING;  
(2) COMPUTERS AS ASSISTANTS TO THE INDIVIDUAL  
AND, (3) SOCIAL IMPLICATIONS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-663 525 9/5 9/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE RESEARCH LAB OF  
ELECTRONICS  
A PROGRAM FOR ON-LINE ANALYSIS OF NONLINEAR  
ELECTRONIC CIRCUITS, (U)  
67 6P KATZENELSON, JACOB ?  
EVANS, DAVID S. ; LEE, HARRY B. ;  
CONTRACT: DA-36-039-AMC-03200(E), NSG-496  
PROJ: DSH-6152, DSR-9442

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN IEEE INTERNATIONAL  
CONVENTION RECORD PT. 5 P89-94 1967.  
SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR  
FORCE, ARPA, AND NONR.

DESCRIPTORS: (\*ELECTRICAL NETWORKS, ANALYSIS),  
DATA PROCESSING SYSTEMS, TIME SHARING, COSTS,  
NONLINEAR SYSTEMS, REMOTE CONTROL SYSTEMS,  
PROGRAMMING(COMPUTERS), DISPLAY SYSTEMS,  
INPUT-OUTPUT DEVICES (U)

IDENTIFIERS: COMPATIBLE TIME-SHARING SYSTEM, ON-  
LINE SYSTEMS, AEDNET, BATCH PROCESSING (U)

USERS HAVE FOUND THAT AEDNET PROGRAM TO BE  
ATTRACTIVE BECAUSE OF THE EASE WITH WHICH IT CAN BE  
USED, THE SPEED OF RESPONSE, AND THE FACT THAT A USER  
NEED NOT SPECIFY THE COURSE OF HIS ANALYSIS AT THE  
OUTSET. THE COST OF TERMINAL HARDWARE AND PROGRAM  
DEVELOPMENT PRESENTLY IS HIGH. HOWEVER, COSTS  
SHOULD BE GREATLY REDUCED WHEN ON-LINE COMPUTATIONAL  
FACILITIES BECOME COMMERCIALLY AVAILABLE AND USERS  
COOPERATE IN PROGRAM DEVELOPMENT. THUS IT APPEARS  
LIKELY THAT ON-LINE CIRCUIT ANALYSIS PROGRAMS WILL  
FIND EXTENSIVE USE IN BOTH INDUSTRY AND EDUCATION.  
(AUTHOR) (U)

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A00396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 039 15/S 9/2  
RAND CORP SANTA MONICA CALIF  
COMBAT -- A SERIES OF ON-LINE COMPUTER PROGRAMS FOR  
FORCE COST ANALYSIS. (U)  
DEC 67 20P TENG,C. ITENZER,A. JO I  
REPT. NO. P-3646

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PRESENTED AT THE 1967 COMPUTER  
SUMMER WORKSHOP SPONSORED BY THE INDUSTRIAL COLLEGE  
OF THE ARMED FORCES AND THE UNITED STATES MILITARY  
ACADEMY, WEST POINT, N.Y., JUL 20 1967.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, ARMED  
FORCES OPERATIONS), (+ARMED FORCES OPERATIONS,  
COST EFFECTIVENESS), COSTS, COMPUTER PROGRAMS,  
DATA PROCESSING SYSTEMS, MILITARY REQUIREMENTS,  
DECISION MAKING, EFFECTIVENESS, MATHEMATICAL  
MODELS, ITERATIVE METHODS (U)

IDENTIFIERS: ON-LINE SYSTEMS, COMBAT(COST  
ORIENTED MODELS BUILT TO ANALYZE TRADE-  
OFFS), TRADE OFFS (U)

THE REPORT DESCRIBES A NEW FORCE STRUCTURE COST-  
ESTIMATING MODEL CALLED COMBAT. IT IS PROGRAMMED  
FOR AN ON-LINE COMPUTER SYSTEM, AND DESIGNED WITH THE  
WAR GAMING ACTIVITY IN MIND. COMBAT STANDS FOR  
COST ORIENTED MODELS BUILT TO ANALYZE TRADE-OFFS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-664 673 7/2 17/2  
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS  
LAB  
A LOW-COST GRAPHIC DISPLAY FOR A COMPUTER TIME-  
SHARING CONSOLE. (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
JUL 67 32P STOTZ,ROBERT H. I  
CHEEK,THOMAS B. I  
REPT. NO. ESL-TM-316  
CONTRACT: NONR-4102(01)  
PROJ: DSR-79474

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, \*TIME  
SHARING), (\*INPUT-OUTPUT DEVICES, REMOTE CONTROL  
SYSTEMS), (\*GRAPHICS, DISPLAY SYSTEMS),  
TELETYPE SYSTEMS, TYPEWRITERS, SYMBOLS,  
EFFICIENCY, COSTS, DATA TRANSMISSION SYSTEMS,  
TELEPHONE COMMUNICATION SYSTEMS, DATA STORAGE  
SYSTEMS, LOGIC CIRCUITS, MAN-MACHINE SYSTEMS  
IDENTIFIERS: ALPHA-NUMERIC SYMBOLS, KEYBOARDS,  
MAC PROJECT, TELETYPEWRITERS (U)

THE ADVENT OF TIME-SHARED COMPUTER SYSTEMS HAS  
CREATED A NEED FOR A FLEXIBLE AND RELATIVELY LOW-COST  
COMMUNICATION TERMINAL FOR REMOTE COMPUTER ACCESS.  
MOST TIME-SHARED SYSTEMS NOW USE MECHANICAL  
TELETYPEWRITERS WHICH ARE SLOW AND UNABLE TO PRESENT  
GRAPHIC DISPLAYS--A SERIOUS LIMITATION IN MANY  
SOPHISTICATED COMPUTER APPLICATIONS. THE BEST  
CANDIDATE FOR A TELETYPEWRITER REPLACEMENT APPEARS TO  
BE A CRT CONSOLE WITH AN ALPHANUMERIC KEYBOARD  
INPUT WHICH CAN CONNECT AS A 'STAND ALONE' UNIT TO A  
STANDARD TELEPHONE LINE. THE UNIT USES A DIRECT-  
VIEW STORAGE TUBE (DVST) FOR A DISPLAY SCREEN AND  
CONTAINS A VECTOR GENERATOR AND A SYMBOL GENERATOR  
FOR THE FULL ASCII SYMBOL SET. IT CAN CONNECT TO  
A CENTRAL COMPUTER VIA A 1200-2400 BAUD DATAPHONE  
LINE. A MANUALLY-CONTROLLED ELECTRONIC CURSOR FOR  
GRAPHICAL INPUT TO THE COMPUTER CAN ALSO BE ADDED.  
(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 443 9/2 S/5  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS  
HUMAN FACTORS AND THE DESIGN OF TIME SHARING COMPUTER  
SYSTEMS. (U)  
NOV 67 26P HICKERSON, R. S. TELKIND, JR.  
I. ICARBONELL, J. R. I  
REPT. NO. SCIENTIFIC-2  
CONTRACT: F19628-68-C-0125  
PROJ: AF-8668  
TASK: 866800  
MONITOR: AFCRL 68-0054

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO SCIENTIFIC REPT. NO. 3,  
AD-666-065.

DESCRIPTORS: (+TIME SHARING, HUMAN  
ENGINEERING), DIGITAL COMPUTERS, MAN-MACHINE  
SYSTEMS, PROGRAMMING LANGUAGES, ALGORITHMS,  
OPTIMIZATION, COSTS (U)

IDENTIFIERS: TRADEOFFS (U)

THE ADVENT OF COMPUTER TIME SHARING POSES AN  
EXTRAORDINARY CHALLENGE TO HUMAN FACTORS RESEARCH  
DURING THE NEXT DECADE. BEFORE TIME SHARING, TWO  
FACTS COMBINED TO DE-EMPHASIZE THE IMPORTANCE OF  
HUMAN FACTORS CONSIDERATIONS IN THE DESIGN OF  
COMPUTER SYSTEMS: (1) THE COST OF THE  
COMPUTER'S TIME WAS EXORBITANTLY HIGH RELATIVE TO THE  
COST OF USERS' TIME, AND (2) THE USERS  
CONSTITUTED A SELECT, HIGHLY SKILLED AND HIGHLY  
NOTIVATED GROUP OF SPECIALISTS. TWO OF THE  
PROMISES OF TIME SHARING, HOWEVER, ARE (1) A  
DRAS C REDUCTION IN THE COST OF COMPUTER TIME TO THE  
INDIVIDUAL USER, AND (2) THE LARGE SCALE  
AVAILABILITY OF COMPUTER FACILITIES TO INDIVIDUALS  
UNTRAINED IN ANY AREAS OF COMPUTER TECHNOLOGY.  
HUMAN FACTORS CONSIDERATIONS THEN BECOME IMPORTANT  
BOTH FOR ECONOMIC AND PSYCHOLOGICAL REASONS. THIS  
PAPER BRIEFLY NOTES WHAT A FEW OF THESE  
CONSIDERATIONS ARE. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 556 5/2  
FRANKFORD ARSENAL PHILADELPHIA PA  
INFORMATION RETRIEVAL. A CRITICAL VIEW,  
67 294P SCHECTER,GEORGE I (U)

UNCLASSIFIED REPORT

AVAILABILITY: HARD COPY AVAILABLE FROM THOMPSON  
BOOK STORE, 14TH AND F ST. N. W., WASHINGTON,  
D. C. 20004, \$11.00.

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
ANNUAL COLLOQUIUM ON INFORMATION RETRIEVAL  
(3RD), MAY 12-13, 1966, PHILADELPHIA, PA.

DESCRIPTORS: (+INFORMATION RETRIEVAL, REVIEWS),  
COMPUTERS, BIBLIOGRAPHIES, SEARCH THEORY,  
SUBJECT INDEXING, CHEMISTRY, PSYCHOLOGY, DATA  
PROCESSING SYSTEMS, SYMPOSIA (U)

IDENTIFIERS: ON-LINE SYSTEMS, INFORMATION  
SYSTEMS (U)

CONTENTS: MOVING CONGRESS INTO THE AGE OF  
THE COMPUTER; INFORMATION SYSTEM NETWORKS--LETS  
PROFIT FROM WHAT WE KNOW; THE BOLD (BIBLIOGRAPHIC  
ON-LINE DISPLAY) SYSTEM; THE DESIGN AND  
TESTING OF A FULLY AUTOMATIC INDEXING-SEARCHING  
SYSTEM FOR DOCUMENTS CONSISTING OF EXPOSITORY TEXT;  
THE TIP RETRIEVAL SYSTEM AT MIT; A LIST-  
STRUCTURED CHEMICAL INFORMATION RETRIEVAL SYSTEM;  
PERFORMANCE OF IR SYSTEMS; PSYCHOLOGY AND  
INFORMATION RETRIEVAL; USER APPRAISAL OF AN  
INFORMATION SYSTEM AND SERVICES THROUGH A PROGRAM OF  
JOINT APPLIED RESEARCH; INFOL; A GENERALIZED  
LANGUAGE FOR INFORMATION STORAGE AND RETRIEVAL  
APPLICATIONS; GETTING IT OUT OF OUR SYSTEM;  
RELATIONAL DATA FILE I; DESIGN PHILOSOPHY;  
RELATIONAL DATA FILE II; IMPLEMENTATION; THE  
SOLAR SYSTEM II; A GENERAL METHOD FOR ORGANIZING  
AND SEARCHING FILES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: A00396

AD-666 666 9/2  
BOLT BERANEK AND NEWMAN INC CAMBRIDGE MASS  
ON MAN-COMPUTER INTERACTION: A MODEL AND SOME  
RELATED ISSUES,  
SEP 67 42P CARBONELL, JAIME R. I  
REPT. NO. SCIENTIFIC-1, BBN-1593  
CONTRACT F19628-68-C-0125, ARPA ORDER-627  
PROJ: 8668  
TASK: 866801  
MONITOR: AFCRL 68-0053

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (COMPUTERS, MAN-MACHINE SYSTEMS),  
BEHAVIOR, TIME-SHARING, INTERACTIONS, COSTS,  
DECISION THEORY, PROGRAMMING(COMPUTERS),  
MATHEMATICAL MODELS

(U)

IDENTIFIERS: ON-LINE SYSTEMS,  
DEBUGGING(COMPUTERS), OPTIMAL CONTROL THEORY

(U)

A SURVEY OF THE LITERATURE RELATED TO MAN-COMPUTER  
INTERACTION REVEALS THE MANY ASPECTS OF THIS PROBLEM,  
WHICH APPEARS TO BE IN THE CROSSROADS AMONG SUCH  
DIVERSE FIELDS AS COMPUTER LANGUAGES, COMPUTER  
SYSTEMS OPERATIONAL CHARACTERISTICS, CONTROL THEORY,  
DECISION THEORY, INFORMATION THEORY, APPLIED  
PSYCHOLOGY, COMPUTER DISPLAY AND INTERFACE  
ENGINEERING, ETC. IN THIS PAPER WE HAVE CHOSEN TO  
PRESENT THE ON-LINE INTERACTION FROM AN INFORMATION  
AND DECISION POINT OF VIEW. A MODEL IS GIVEN OF  
THE CASE IN WHICH A HUMAN OPERATOR IS ENGAGED ON-LINE  
IN THE SOLUTION OF A PROBLEM LIKE DEBUGGING A  
PROGRAM, TESTING A MODEL IN A SCIENTIFIC APPLICATION,  
OR PERFORMING A LIBRARY SEARCH. IN THIS MODEL THE  
HUMAN OPERATOR IS CONSIDERED TO SEEK TO MINIMIZE  
OVERALL COST. THIS COST IS OBTAINED BY ADDING THE  
OPERATIONAL COST OF BOTH MAN AND COMPUTER TO A  
REMNANT TERMINAL COST ORIGINATED BY THE REMAINING  
UNCERTAINTY. THIS ANALYSIS, PERFORMED FOR EACH OF  
A SET OF POSSIBLE ALTERNATIVES FOR ACTION, MAY LEAD  
TO SELECT AND EXECUTE ONE OF THEM, TO TERMINATE THE  
PROCESS, OR TO RE-EVALUATE THE POSSIBLE ALTERNATIVES  
AND/OR HYPOTHESES IN A SEARCH FOR NEW ONES. SOME  
PRACTICAL APPLICATIONS IN TERMS OF RESPONSE TIME AND  
OTHER CHARACTERISTICS OF A COMPUTER UTILITY ARE  
PRESENTED, AS WELL AS SOME THEORETICAL IMPLICATIONS  
FROM AN INFORMATIONAL POINT OF VIEW. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-666 730 9/2  
CARNEGIE INST OF TECH PITTSBURGH PA  
TIME SHARING. PART ONE. THE FUNDAMENTALS OF TIME  
SHARING. PART TWO. AN EVALUATION OF COMMERCIAL TIME  
SHARING COMPUTERS. PART THREE. OPERATIONAL  
MANAGEMENT OF TIME SHARING SYSTEMS. (U)  
DESCRIPTIVE NOTE: DATA PROCESSING MONOGRAPH SERIES.  
67 130P BELL,C. GORDON (GOLD,M.  
M. STEADY,A. C. LINDE,RICHARD R. I  
CHANAY,PAUL E. I  
CONTRACT: NQNR-760(24), SD-146

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: RESEARCH SUPPORTED IN PART BY AIR  
FORCE SYSTEMS COMMAND. PREPARED IN COOPERATION WITH  
MIT, AND SYSTEM DEVELOPMENT CORPORATION.

DESCRIPTORS: (TIME SHARING, STATE-OF-THE-ART  
REVIEWS), DATA STORAGE SYSTEMS, INPUT-OUTPUT  
DEVICES, PROGRAMMING(COMPUTERS), REMOTE  
CONTROL SYSTEMS, DIGITAL COMPUTERS, REAL TIME,  
OPERATION, SCHEDULING, ECONOMICS, MANAGEMENT  
PLANNING, CORRELATION TECHNIQUES; MULTIPLE  
OPERATION (U)  
IDENTIFIERS: ON-LINE SYSTEMS, BATCH PROCESSING,  
PRIVACY(COMPUTERS) (U)

CONTENTS: THE FUNDAMENTALS OF TIME SHARING; AN  
EVALUATION OF COMMERCIAL TIME SHARING COMPUTERS;  
OPERATIONAL MANAGEMENT OF TIME SHARING SYSTEMS. (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00394

AD-667 633 9/2  
CALIFORNIA UNIV BERKELEY  
A FACILITY FOR EXPERIMENTATION IN MAN-MACHINE  
INTERACTION,  
JAN 66 11P LICHENBERGER, R. W. I  
PIRTLE, M. W. I  
REPT. NO. P-3  
CONTRACT: SD-185

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS; TIME  
SHARING), (+TIME SHARING, DIGITAL COMPUTERS);  
(+PROGRAMMING(COMPUTERS)), MULTIPLE  
OPERATION), MAN-MACHINE SYSTEMS, REMOTE CONTROL  
SYSTEMS, DATA STORAGE SYSTEMS, TELETYPE SYSTEMS  
IDENTIFIERS: ON-LINE SYSTEMS,  
MULTIPROGRAMMING

(U)

(U)

THE TIME-SHARING SYSTEM INVOLVING MEMORY  
RELABELING, COMMON ROUTINES, AND DUPLEX TELETYPE  
OPERATION HAS BEEN IN OPERATION SINCE APRIL, 1965.  
THE SYSTEM IS HIGHLY FLEXIBLE AND CAN PROVIDE A  
RESPONSE TIME OF LESS THAN ONE SECOND. MEMORY  
RELABELING IS ACCOMPLISHED WITH NO INCREASE IN ACCESS  
TIME. THE NUMBER OF PROCESSOR MODES IS SMALL  
(TWO), AND MODE TRANSITIONS ARE DONE IN SUCH A  
WAY AS TO ENABLE INTERRUPT AND USER-CALLED SYSTEM  
ROUTINES TO BE INDEPENDENT OF MODE. THE USER  
MACHINE IS CLEAN AND WELL DEFINED. INPUT/OUTPUT IS  
SIMPLER, MORE FOOLPROOF, AND DEVICE-INDEPENDENT.  
THE USER IS GIVEN A VARIETY OF OTHER SERVICES  
RANGING FROM GENERALIZED FILE-HANDLING CAPABILITY TO  
STRING PROCESSING TO ASSEMBLERS, COMPILES,  
DEBUGGERS, AND EDITORS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 634 9/2  
CALIFORNIA UNIV BERKELEY  
REFERENCE MANUAL TIME-SHARING SYSTEM. (U)  
DESCRIPTIVE NOTE: REVISED ED.,  
NOV 67 99P DEUTSCH,L. PETER ;  
DURHAM,LARRY LAMPSON,BUTLER W. ;  
REPT. NO. R-21

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, TIME SHARING), (\*PROGRAMMING(COMPUTERS), MULTIPLE OPERATION), (\*TIME SHARING, INSTRUCTION MANUALS), SCHEDULING, TELETYPE SYSTEMS, REMOTE CONTROL SYSTEMS, DATA STORAGE SYSTEMS (U)  
IDENTIFIERS: FLOATING-POINT OPERATION, ON-LINE SYSTEMS (U)

THE BERKELEY TIME-SHARING SYSTEM IS DIVIDED INTO THREE MAJOR PARTS; THE MONITOR, THE EXECUTIVE, AND THE SUBSYSTEMS. ONLY THE FIRST TWO OF THESE ARE DISCUSSED IN DETAIL IN THIS MANUAL. THE MANUAL ATTEMPTS TO DESCRIBE EXHAUSTIVELY ALL THE FEATURES OF THE MONITOR AND IN ADDITION TO GIVE A NUMBER OF IMPLEMENTATION DETAILS. IT ALSO DESCRIBES THOSE FEATURES OF THE EXECUTIVE WHICH CAN BE INVOKED BY A PROGRAM. THE WORD MONITOR IS USED TO REFER TO THAT PORTION OF THE SYSTEM WHICH IS CONCERNED WITH SCHEDULING, INPUT-OUTPUT, INTERRUPT PROCESSING, MEMORY ALLOCATION AND SWAPPING, AND THE CONTROL OF ACTIVE PROGRAMS. THE EXECUTIVE IS CONCERNED WITH THE CONTROL OF THE DIRECTORY OF SYMBOLIC FILE NAMES AND BACKUP STORAGE FOR THESE FILES, AND VARIOUS MISCELLANEOUS MATTERS. OTHER PARTS OF THE EXECUTIVE HANDLE THE COMMAND LANGUAGE BY WHICH THE USER CONTROLS THE SYSTEM FROM HIS TELETYPE, THE IDENTIFICATION OF USERS AND SPECIFICATION OF THE LIMITS OF THEIR ACCESS TO THE SYSTEM. THESE SUBJECTS ARE DISCUSSED IN THE EXECUTIVE REFERENCE MANUAL, AD-667 635. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 635 9/2  
CALIFORNIA UNIV BERKELEY  
REFERENCE MANUAL FOR THE TIME-SHARING EXECUTIVE. (U)  
JAN 68 268 DURHAM,L. (ETHERTON,M. I  
REPT. NO. R-22  
CONTRACT: SD-105

UNCLASSIFIED REPORT

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, TIME SHARING), (+PROGRAMMING(COMPUTER,), MULTIPLE OPERATION), (+TIME SHARING, INSTRUCTION MANUALS), TELETYPE SYSTEMS, REMOTE CONTROL SYSTEMS, PROGRAMMING LANGUAGES, INPUT-OUTPUT DEVICES

IDENTIFIERS: ON-LINE SYSTEMS

(U)  
(D)

THE PROJECT GENIE OPERATING SYSTEM IS A MEDIUM SCALE MULTI-ACCESS COMPUTATIONAL SYSTEM WHICH IMPLEMENTS A POWERFUL AND COMPLEX USER MACHINE. IT IS THE ROLE OF THE COMMAND LANGUAGE (HERE CALLED THE EXECUTIVE) TO PROVIDE SOME TOOLS TO CONTROL THIS USER MACHINE, AND TO PROVIDE THOSE SERVICES WHICH USERS HAVE COME TO EXPECT OF CONVERSATIONAL SYSTEMS. THIS DOCUMENT DESCRIBES THE SYSTEM COMMAND LANGUAGE.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-667 659 9/2  
CALIFORNIA UNIV BERKELEY  
A USER MACHINE IN A TIME-SHARING SYSTEM. (U)  
DESCRIPTIVE NOTE: REVISED ED.,  
AUG 66 12P LAMPSON,B. W.;  
LICHENBERGER,W. W. SPITTLE,M. W.  
CONTRACT: SD-185

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE  
IEEE, V54 N12 P1766-74 1966.  
SUPPLEMENTARY NOTE: REPORT ON PROJ. GENIE, REVISION  
OF REPORT DATED 12 JUL 66.

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, \*TIME  
SHARING), (\*PROGRAMMING(COMPUTERS), MULTIPLE  
OPERATION), DATA STORAGE SYSTEMS, REMOTE CONTROL  
SYSTEMS, INPUT-OUTPUT DEVICES, MAN-MACHINE  
SYSTEMS (U)

IDENTIFIERS: GENIE PROJECT, MULTIPROCESSING,  
ON-LINE SYSTEMS (U)

THE PAPER DESCRIBES THE DESIGN OF THE COMPUTER SEEN  
BY A MACHINE-LANGUAGE PROGRAMMER IN A TIME-SHARING  
SYSTEM DEVELOPED AT THE UNIVERSITY OF CALIFORNIA  
AT BERKELEY. SOME OF THE INSTRUCTIONS IN THIS  
MACHINE ARE EXECUTED BY THE HARDWARE, AND SOME ARE  
IMPLEMENTED BY SOFTWARE. THE USER, HOWEVER, THINKS  
OF THEM ALL AS PART OF HIS MACHINE, A MACHINE HAVING  
EXTENSIVE AND UNUSUAL CAPABILITIES, MANY OF WHICH  
MIGHT BE PART OF THE HARDWARE OF A (CONSIDERABLY  
MORE EXPENSIVE) COMPUTER. AMONG THE IMPORTANT  
FEATURES OF THE MACHINE ARE THE ARITHMETIC AND STRING  
MANIPULATION INSTRUCTION - THE VERY GENERAL MEMORY  
ALLOCATION AND CONFIGURATION MECHANISM, AND THE  
MULTIPLE PROCESSES WHICH CAN BE CREATED BY THE  
PROGRAM. FACILITIES ARE PROVIDED FOR COMMUNICATION  
AMONG THESE PROCESSES AND FOR THE CONTROL OF  
EXCEPTIONAL CONDITIONS. THE INPUT-OUTPUT SYSTEM IS  
CAPABLE OF HANDLING ALL OF THE PERIPHERAL EQUIPMENT  
IN A UNIFORM AND CONVENIENT MANNER THROUGH FILES  
HAVING SYMBOLIC NAMES. PROGRAMS CAN ACCESS FILES  
BELONGING TO A NUMBER OF PEOPLE, BUT EACH PERSON CAN  
PROTECT HIS OWN FILES FROM UNAUTHORIZED ACCESS BY  
OTHERS. SOME MENTION IS MADE AT VARIOUS POINTS OF  
THE TECHNIQUES OF IMPLEMENTATION, BUT THE MAIN  
EMPHASIS IS ON THE APPEARANCE OF THE USER'S MACHINE.  
(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 078 9/2 5/2  
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER  
SCIENCE  
STEPS TOWARD A GENERAL PURPOSE TIME-SHARING SYSTEM  
USING LARGE CAPACITY CORE STORAGE AND TSS/360. (U)  
MAR 68 36P FIKES, RICHARD E.  
LAUER, HUGH C. IVAREHA, ALBIN L., JR.  
CONTRACT: SD-146  
PROJ: AF-9718  
MONITOR: AFOSR 68-0763

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: PREPARED FOR PRESENTATION AT THE  
NATIONAL CONFERENCE OF ASSOCIATION FOR COMPUTING  
MACHINERY, 1968.

DESCRIPTORS: (\*DATA STORAGE SYSTEMS, TIME  
SHARING), INFORMATION RETRIEVAL,  
PROGRAMMING(COMPUTERS), COSTS, DECISION  
MAKING, CYBERNETICS, TIME, ALGORITHMS, FLOW  
CHARTING, CORRELATION TECHNIQUES (U)

IDENTIFIERS: \*LARGE CAPACITY CORE STORAGE,  
TSS(TIME SHARING SYSTEM), \*TIME SHARING  
SYSTEMS (U)

THIS PAPER IS A PROGRESS REPORT OF AN EFFORT AT  
CARNEGIE-MELLON UNIVERSITY TO DETERMINE HOW A  
LARGE CAPACITY CORE STORAGE FACILITY (LCS) CAN BE  
USED TO REDUCE THE DEMAND PAGING OVERHEAD COSTS IN  
THE IBM SYSTEM/360 TIME SHARING SYSTEM  
(TSS/360) AND IN SIMILAR GENERAL PURPOSE TIME-  
SHARING SYSTEMS. A DISCUSSION IS PRESENTED OF HOW  
THE NUMBER OF PAGING OPERATIONS AND THE COST OF EACH  
PAGING OPERATION CAN BE REDUCED BY USING LCS AS  
BOTH A SWAPPING DEVICE AND AN EXTENSION OF EXECUTABLE  
CORE. TWO PROBLEMS WHICH ARISE ARE CONSIDERED.  
A NEW ALGORITHM FOR RELEASING CORE IS PRESENTED AND  
COMPARED WITH TWO EXISTING ALGORITHMS. FINALLY,  
RESULTS FROM A FEASIBILITY IMPLEMENTATION OF THE  
IDEAS IN A PRE-RELEASE VERSION OF TSS/360 ARE  
PRESENTED AS A DEMONSTRATION OF THE VALIDITY OF USING  
LCS TO REDUCE PAGING OVERHEAD. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-668 084 9/2  
CARNEGIE-MELLON UNIV PITTSBURGH PA DEPT OF COMPUTER  
SCIENCE  
A METHODOLOGY FOR EVALUATING TIME-SHARED COMPUTER  
SYSTEM USAGE, (U)  
AUG 67 ISIP GOLD, MICHAEL M. I  
CONTRACT: SD-146, NONR-4102(DI)  
PROJ: AF-971A  
MONITOR: AFOSR 68-0795

UNCLASSIFIED REPORT

DESCRIPTORS: (+DIGITAL COMPUTERS, +TIME  
SHARING), MAN-MACHINE SYSTEMS, BEHAVIOR,  
PERFORMANCE(ENGINEERING),  
PROGRAMMING(COMPUTERS), PROGRAMMING LANGUAGES,  
COSTS, TIME, LEARNING, FEEDBACK, PROBLEM  
SOLVING, QUESTIONNAIRES, DATA PROCESSING SYSTEMS (U)  
IDENTIFIERS: METHODOLOGY (U)

THE DEVELOPMENT OF TIME-SHARED COMPUTER SYSTEMS HAS  
LED TO MAJOR TECHNICAL AND PHILOSOPHICAL CHANGES IN  
THE COMPUTER FIELD IN THIS DECADE. A LARGE NUMBER  
OF DESIGNERS, MANUFACTURERS, AND USERS OF SUCH  
SYSTEMS HAVE EXPENDED GREAT AMOUNTS OF EFFORT IN THE  
DEVELOPMENT OF THE CAPABILITIES OF THE COMPUTER AND  
THE MEANS TO USE IT. HOWEVER, LITTLE OR NO EFFORT  
HAS YET BEEN EXPENDED TO EVALUATE THESE SYSTEMS IN  
TERMS OF THEIR USEFULNESS FOR PRESENT OR FUTURE  
CUSTOMERS. THE RESEARCH REPORTED HERE HAS FOCUSED  
ON THE DEVELOPMENT OF A METHODOLOGY THROUGH WHICH  
TIME-SHARED COMPUTER SYSTEM USAGE CAN BE EVALUATED.  
IT IS BASED ON A STUDY OF THE CHARACTERISTICS AND  
DESIGN OF PRESENT AND PROPOSED COMPUTER SYSTEMS, AS  
WELL AS RELEVANT BEHAVIORAL THEORY AND RESEARCH.  
FIVE CATEGORIES OF VARIABLES ARE INCLUDED IN THE  
RESULTING METHODOLOGY, NAMELY THOSE WHICH ARE  
MEASURES OF: (1) THE COST OF USING THE SYSTEM;  
(2) THE PERFORMANCE PRODUCED THROUGH THE USE OF  
THE COMPUTER SYSTEM; (3) THE SPEED WITH WHICH  
RESULTS COULD BE PRODUCED; (4) THE AMOUNT OF  
LEARNING RESULTING FROM THE USE OF THE COMPUTER  
SYSTEM; AND (5) THE ATTITUDES OF THE USERS OF THE  
COMPUTER SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 308 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
CERTAIN TIMING CHARACTERISTICS OF A MULTIPANEL  
CALCULATING SYSTEM (NEKOTORYE VREMENNYE  
KHARAKTERISTIKI MNOGOPULTOVOI VYCHISLITELNOI  
SISTEMY),  
(U)

SEP 67 13P MISHURNAYA, M. V.  
REPT. NO. FTD-MT-24-232-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF  
VYCHISLITELNAYA TEKHNIKA V MASHINOSTROENII (USSR)  
P14-20 1965.

DESCRIPTORS: (+DIGITAL COMPUTERS, REMOTE CONTROL  
SYSTEMS), TIME SHARING, MULTIPLE OPERATION,  
CODING, INPUT-OUTPUT DEVICES, TELEGRAPH SYSTEMS,  
USSR  
(U)

IDENTIFIERS: TRANSLATIONS, DIGITAL DATA  
TRANSMISSION, MINSK-2 COMPUTER(USSR) (U)

THE PRESENT PAPER IS A SEQUEL TO ONE ENTITLED  
'THE MULTI-TERMINAL COMPUTER' BY THE SAME  
AUTHOR. EACH TERMINAL IS AN INPUT/OUTPUT  
TELETYPEWRITER LINKED TO A BUFFER SECTION IN THE MAIN  
UNIT. AN INTERRUPT SUBROUTINE IN THE COMPUTER IS  
INITIATED FROM THE INPUT BUFFER WHEN NEW DATA ARE FED  
FROM ONE OF THE TERMINALS OR WHEN THE RESULTS OF  
CALCULATIONS ARE TO BE TRANSMITTED BACK TO A  
PARTICULAR TERMINAL. THIS SUBROUTINE CONTAINS  
PROVISIONS FOR A DELAY AND CERTAIN PRIORITY DECISIONS  
TO ALLOW FOR AN ORDERLY PROCESSING OF INFORMATION BY  
THE COMPUTER. THE TIME REQUIRED FOR A PROCESSING  
OF A PROBLEM ORIGINATING FROM A TERMINAL IS  
CALCULATED. THE DELAY TIME FOR THE SIMULTANEOUS  
OPERATION OF SEVERAL TERMINALS IS ANALYZED AND THE  
APPROPRIATE FORMULAS ARE GIVEN. ALL DERIVED  
EXPRESSIONS ARE VALID FOR ANY MULTI-TERMINAL COMPUTER  
SYSTEM. THE OPERATION OF AN INSTALLATION IN WHICH  
THE I/O TERMINALS ARE ARRANGED IN GROUPS IS  
DISCUSSED AND ITS ADVANTAGES ARE POINTED OUT. IN  
THIS SYSTEM SEVERAL TERMINALS TIME-SHARE A SINGLE  
COMMUNICATION LINE AND A SINGLE SECTION IN THE INPUT  
BUFFER.  
(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00396

AD-669 368 9/2 6/4  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
HAND-PRINTED INPUT FOR ON-LINE SYSTEMS, (U)  
DESCRIPTIVE NOTE: TECHNICAL MEMO.,  
APR 68 24P BERNSTEIN, M. I., I  
REPT. NO. TM-3937/000/00  
CONTRACT: F19628-67-C-0004, AS12-76

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, CHARACTER  
RECOGNITION), (\*PROGRAMMING(COMPUTERS),  
CHARACTER RECOGNITION), INPUT-OUTPUT DEVICES,  
MAN-MACHINE SYSTEMS, TIME SHARING, REAL TIME,  
DIGITAL COMPUTERS, CATHODE RAY TUBE SCREENS,  
FLOW CHARTING (U)

IDENTIFIERS: ON-LINE SYSTEMS, Q=32 COMPUTER,  
RAND TABLET (U)

THE DOCUMENT DESCRIBES A PROGRAM FOR RECOGNIZING  
HAND-PRINTED INFORMATION IN REAL TIME, WHICH PROVIDES  
ON-LINE COMPUTER USERS WITH A MEANS OF INPUTTING TWO-  
DIMENSIONAL INFORMATION AS SIMPLY AS WRITING WITH PEN  
AND PAPER. THE PROGRAM OPERATES UNDER THE TIME-  
SHARING SYSTEM ON THE Q-32 COMPUTER AT SDC,  
AND USES A RAND TABLET FOR INPUT AND A CRT  
DISPLAY (REAR-PROJECTED ON THE TABLET FOR  
OUTPUT). EACH USER OF THE PROGRAM BUILDS A  
UNIQUE CHARACTER DICTIONARY, BASED ON SAMPLES OF HIS  
OWN INPUT CHARACTERS. FOR EACH USER, THE PROGRAM  
CURRENTLY RECOGNIZES ABOUT 100 DIFFERENT CHARACTERS,  
WHICH ARE CHOSEN FROM A LARGER ALPHABET BY THE  
INDIVIDUAL USER. THE DOCUMENT DESCRIBES HOW THE  
RECOGNITION PROGRAM INTERFACES WITH THE TIME-  
SHARING SYSTEM; WHAT FUNCTIONS THE PROGRAM  
PERFORMS IN RECOGNIZING HAND-DRAWN INPUT; AND HOW THE  
CHARACTER DICTIONARY IS CONSTRUCTED AND TESTED.  
THE REPORT CONCLUDES BY SUGGESTING THAT THE  
CHARACTER RECOGNIZER WILL REALIZE ITS GREATEST  
POTENTIAL BY BEING APPLIED TO PROBLEMS THAT REQUIRE  
FREE-FORM (RATHER THAN LINEAR KEYBOARD) INPUT.  
(AUTHOR) (U)

## **COMPUTER COMPONENTS**

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. A00296

AD-256 990  
ILLINOIS UNIV URBANA DIGITAL COMPUTER LAB  
FLOW-GATING (U)  
MAR 61 IV GUCKEL, HENRY; KUNIHIRO, TOSHIRO  
CROW, RONALD K. I  
REPT. NO. 106  
CONTRACT: N0NR183415

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*DIGITAL COMPUTERS,  
\*TRANSISTORS, CODING, COMPUTER STORAGE DEVICES, DATA  
STORAGE SYSTEMS, ELECTRICAL PROPERTIES, FEEDBACK,  
GATES (CIRCUITS), TRIGGER CIRCUITS (U)

WORK CONCERNED TRANSISTOR SELECTION AND EVALUATION.  
THE BASIC DESIGN PROBLEM, AND THE EVALUATION OF THE  
FLOW-GATING MEMORY. THE PROPOSED SYSTEM CONSISTS OF  
14 FLOW-GATING FLIPFLOPS, WHICH CONSTITUTE A 1/4 WORD  
(2 TRANSISTORS PER BIT), THE READ-IN DRIVER  
(18/14 TRANSISTORS PER BIT), THE READ-OUT DRIVER  
(10/14 TRANSISTORS PER BIT), AND TERMINATION  
EQUIPMENT (2/11 TRANSISTORS PER BIT). THE  
SYSTEM USES FIVE TRANSISTORS PER BIT OF WHICH 12/14  
ARE GF45011, 40/77 ARE N-101 AND THE REMAINING  
PARTS ARE OF THE N-100 TYPE. THE TERMINAL  
PROPERTIES ARE GIVEN. THE AC BEHAVIOR IS  
DISCUSSED IN CONSIDERABLE DETAIL. THE READ-IN  
SPEED, AFTER TOLERANCE CORRECTION, IS LESS THAN 90  
NSEC.; THE READ-OUT SPEED IS IN THE VICINITY OF 80  
NSEC., WHEN REFERENCED TO THE INPUT OF THE RESPECTIVE  
DRIVERS. THIS APPARENTLY SATISFIES THE PROPOSED  
REQUIREMENT OF 150 NSEC. ACCESS TIMES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 018  
MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS  
LAB  
TUNNEL DIODE CIRCUITS FOR SWITCHING THIN FILM  
MEMORIES (U)  
JAN 61 IV DAVIS,PAUL C.  
REPT. NO. TM100  
CONTRACT AF33 616 5489

UNCLASSIFIED REPORT

DESCRIPTORS: \*DIODES, \*PULSE GENERATORS, \*SWITCHING  
CIRCUITS, \*TRIGGER CIRCUITS, ARSENIDES, CIRCUITS,  
COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE  
SYSTEMS, DESIGN, GALLIUM COMPOUNDS, GERMANIUM,  
MAGNETIC MATERIALS, MATHEMATICAL ANALYSIS, THIN FILMS  
(STORAGE DEVICES), TRANSMISSION LINES (U)

IDENTIFIERS: THIN FILMS, THIN FILMS  
ELECTRONICS (M)

TUNNEL-DIODE CIRCUITS ARE INVESTIGATED  
THEORETICALLY AS A SOURCE OF HIGH-SPEED CURRENT  
PULSES CAPABLE OF SWITCHING THIN FILM MEMORIES IN THE  
ORDER OF TENS OF MILLIMICROSECONDS. BREAK-POINT  
MODELS OF THE CHARACTERISTIC CURVE ARE CONSTRUCTED  
AND PIECEWISE LINEAR ANALYSIS IS USED TO PREDICT AND  
EXTRAPOLATE EXPERIMENTAL RESULTS. THREE BASIC  
CIRCUITS WERE CHOSEN AS DRIVERS FOR VARIOUS LOAD  
FORMS AND LEVELS. THESE WERE TRIED IN THE  
LABORATORY AND RESULTS ARE GIVEN. EACH OF THESE  
CIRCUITS UTILIZED A NOVEL QUICK-RECOVERY FEATURE  
WHICH WAS RESPONSIBLE FOR ABOUT ONE-HALF TO TWO-  
THIRDS OF THE SUM OF THE DIODE PEAK CURRENTS  
NECESSARY FOR A GIVEN LOAD CURRENT. THE RECOVERY  
TIME WAS MADE EQUAL TO THE PULSE WIDTH, WHICH WAS 20  
MILLIMICROSECONDS. THE TRIGGERING DELAY TIME WAS  
APPROXIMATELY ONE-HALF THE PULSE WIDTH FOR ALL THREE  
CIRCUITS. IT WAS CONCLUDED THAT TUNNEL DIODES CAN  
BE USED TO DRIVE THIN MAGNETIC FILMS IN STRIP LINES  
AT THE SPEED DESIRED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-257 182

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

CRYOSAR MEMORY DESIGN

(U)

MAY 61 JV JOHNSTON,R.C. I

REPT. NO. S3G 0044

CONTRACT: AF19 604 7400

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*ELECTRICAL EQUIPMENT, COMPUTERS, DESIGN, ELECTRIC FIELDS, GERMANIUM, IMPURITIES, IONIZATION (U)

THE COMPENSATED CRYOSAR IS A NEGATIVE-RESISTANCE TWO-Terminal DEVICE UTILIZING A BULK EFFECT IN GERMANIUM AT LIQUID HELIUM TEMPERATURES. ITS USE IN A COMPUTER MEMORY IS FORESEEN BECAUSE OF ITS BISTABLE NATURE AND ITS EASE OF FABRICATION IN LARGE ARRAYS. HOWEVER, CAREFUL CONSIDERATION OF DEVICE AND CIRCUIT PARAMETERS IS NECESSARY IF A SUCCESSFUL LARGE MEMORY IS TO BE ACHIEVED. (AUTHOR) (U)

UNCLASSIFIED

OIC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-299 229

INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y

PROJECT LIGHTNING

(U)

NOV 60 IV

CONTRACT: NO83R77508

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*COMPUTERS,  
\*CRYOGENICS, \*DATA PROCESSING SYSTEMS, \*DATA STORAGE  
SYSTEMS, \*SWITCHING CIRCUITS, CIRCUITS, DESIGN,  
MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT,  
SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS  
(STORAGE DEVICES), TRIGGER CIRCUITS (U)

IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS,  
THIN FILMS ELECTRONICS (U)

WORK WAS CONTINUED IN CRYOGENICS AND ASSOCIATED  
MACHINE ORGANIZATION DEVOTED TO EVALUATING THE  
FEASIBILITY OF A COMPUTER SYSTEM CAPABLE OF  
PERFORMING BASIC LOGIC OPERATIONS AT A RATE OF 1000  
MC. IT WAS CONCLUDED THAT SUBSTANTIAL IMPROVEMENT  
IN THE EFFICIENCY OF A KILOMEGACYCLE CRYOTRONIC  
MACHINE CAN BE OBTAINED BY REDUCING THE PLANAR  
DIMENSIONS OF THE CIRCUITS AND USING A SUBSTRATE  
HAVING HIGH THERMAL CONDUCTIVITY. EFFORTS WERE  
MADE TO FIND SUBSTRATES WHICH CAN BE USED FOR  
CIRCUITS AND WHICH WILL ALLEVIATE THE HEAT PROBLEM BY  
INCREASING THE THERMAL CONDUCTIVITY TO THE BATH. A  
FIRST SET OF RESULTS WAS OBTAINED IN THE MULTIPLEXING  
STUDY AND PRELIMINARY DATA ON THE EFFECT OF QUEUE  
LENGTH ARE REPORTED. A PLAN TO DESIGN AND CONSTRUCT  
A HIGH-SPEED ADDRESSABLE MEMORY WAS PREPARED. THE  
MODIFICATIONS OF THE CRYOTRON NETWORK SIMULATOR  
RESULTED IN SIMULATION RESULTS THAT AGREED WITH  
EXPERIMENTAL RESULTS FOR SLOW CROSSED-FILM CRYOTRON  
CIRCUITS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-259 376

TEXAS INSTRUMENTS INC DALLAS  
SILICON SEMICONDUCTOR SOLID CIRCUITS (U)  
MAY 61 IV BROWER, WILLIAM; CRAGON, HARVEY;  
CONTRACT AF33 600 42210  
MONITOR ASD IR7 065 VI

UNCLASSIFIED REPORT

DESCRIPTORS: \*DIODES, \*SEMICONDUCTORS, \*TRANSISTORS,  
ANHYDRIDES, BORATES, BORON, CAPACITORS, CHLORIDES,  
CIRCUITS, CLEANING, CONTAINERS, DESIGN, DIFFUSION,  
DIGITAL COMPUTERS, ELECTRICAL PROPERTIES, EVAPORATION,  
MANUFACTURING METHODS, MEASUREMENT, METHYL RADICALS,  
OXIDES, PHOSPHORUS, PHOTOENGRAVING, PRINTED CIRCUITS,  
SILICON, SOLID STATE PHYSICS, SUBMINIATURE ELECTRONIC  
EQUIPMENT, TEST SETS, THIN FILMS (STORAGE DEVICES),  
TRIGGER CIRCUITS (U)

IDENTIFIERS: THIN FILMS, THIN FILMS (M)  
ELECTRONICS

PROCESS TECHNIQUES REQUIRED FOR THE FABRICATION OF  
SEMICONDUCTOR NETWORKS ARE BEING ESTABLISHED.  
STUDIES OF SILICON SLICE PREPARATION, DIFFUSION,  
CONTACT FORMATION, FILM DIELECTRICS AND TEST  
STRUCTURES ARE DISCUSSED. EQUIPMENT ASSEMBLY  
TECHNIQUES FOR A SERIAL, DIGITAL COMPUTER ARE  
INVESTIGATED. (AUTHOR) (U)

UNCLASSIFIED

DLC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-240 117

COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK  
CALIF

FUNDAMENTAL INVESTIGATION OF DIGITAL COMPUTER STORAGE  
AND ACCESS TECHNIQUES (U)

MAY 61 IV MILLER,S.W.1

CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, +DATA STORAGE  
SYSTEMS, +DIGITAL COMPUTERS, CAPACITORS, COSTS, DELAY  
LINES, FERROELECTRICITY, MAGNETIC CORES, MAGNETIC  
TAPE, NEGATIVE RESISTANCE CIRCUITS, PHOTOGRAPHY,  
SUPERCONDUCTIVITY, SWITCHING CIRCUITS,  
THERMOPLASTICS (U)

COMPUTER TECHNIQUES LAB., STANF RD RESEA CH  
INST., MENLO PARK, CALIF. FUNDAMENTAL  
INVESTIGATION OF DIGITAL COMPUTER STORAGE AND ACCESS  
TECHNIQUES. RPRT. FOR 1 APR 60-1 APR 61, BY  
S. W. MILLER. MAY 61, OP. INCL. ILLUS. 112  
REFS. (CONTRACT AF 30(602)2227, PROJ.

40271 (HADC TR 61-117A) UNCLASSIFIED RPRT  
DESCRIPTORS: +DIGITAL COMPUTERS, +MEMORY  
DEVICES, +DATA STORAGE SYSTEMS, SWITCHING  
CIRCUITS, MAGNETIC CORES, FERROELECTRICITY,  
CAPACITORS, NEGATIVE RESISTANCE CIRCUITS,  
DELAY LINES, PHOTOGRAPHY, SUPERCONDUCTIVITY,  
COSTS, MAGNETIC TAPE, MAGNETIC CORE SWITCHES.  
OPEN-ENDED TERMS: THERMOPLASTIC RECORDING.

THE ARTIFICE OF A CONCEPTUAL MODEL OF A STORAGE  
UNIT WAS USED IN ORDER TO CLASSIFY THE VARIOUS KINDS  
OF STORAGE UNITS ACCORDING TO THEIR TERMINAL  
CHARACTERISTICS. THE IMPORTANT TERMINAL  
CHARACTERISTICS ARE THE STORAGE CAPACITY, SPEED AND  
ORDER OF ACCESS, THE OPERATING MODE, AND THE  
PERMANENCE OF THE STORED DATA. THIS MODEL WAS  
DISSECTED INTO FOUR FUNDAMENTAL PARTS, AN AGGREGATE  
OF STORAGE REGISTERS, ACCESS EQUIPMENT FOR SELECTION  
AND EXCITATION OF THE DESIRED REGISTER THE SENSING  
EQUIPMENT FOR DETERMINING THE DATA STORED IN THE  
REGISTER, AND THE ORGANIZATIONAL SCHEME USED FOR  
THEIR INTERCONNECTION. THE VARIOUS TECHNIQUES FOR  
ACHIEVING THESE FUNDAMENTAL OPERATIONS, EITHER IN USE  
OR BEING DEVELOPED, ARE OUTLINED AND DISCUSSED.  
THE RELATION BETWEEN THE USE OF PARTICULAR  
TECHNIQUES IN A STORAGE UNIT AND THE POSITION OF THAT  
STORAGE UNIT ON THE CAPACITY VS SPEED GRAPH IS SHOWN  
WITH SOME PREDICTIONS FOR IMPROVEMENTS.

9AUTHOR)

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(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 118  
COMPUTER TECHNIQUES LAB STANFORD RESEARCH INST MENLO PARK  
CALIF  
MAGNETIC CORE ACCESS SWITCHES (U)  
MAY 61 IV HAYNES, JOHN L, IMINICK, ROBERT C.  
CONTRACT: AF30 602 2227

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*DIGITAL COMPUTERS, ALGEBRA, DESIGN, ELECTRONIC SWITCHES, MAGNETIC CORES, MATHEMATICAL ANALYSIS, MATRIX ALGEBRA, SWITCHING CIRCUITS (U)

A NUMBER OF THE MORE COMMONLY KNOWN MAGNETIC CORE ACCESS SWITCHES ARE COMBINED IN A SINGLE ANALYTICAL MODEL. IN ADDITION TO YIELDING AS SPECIAL CASES THE KNOWN ACCESS SWITCHES ON WHICH IT IS BASED, THIS MODEL PRODUCES MANY APPARENTLY NEW SWITCHES.

RELATIONSHIPS AMONG THE VARIOUS PARAMETERS IN THIS MODEL ARE DEVELOPED IN SUCH A WAY THAT THE DESIGNER MAY CHOOSE THE NUMBER OF DRIVERS, THE LOAD-SHARING FACTOR, THE NUMBER OF TURNS OF WIRE PER SWITCH CORE AND THE MAGNITUDE OF THE MAXIMUM DISTURBING MAGNETOMOTIVE FORCE WITHIN CERTAIN LIMITS. AS FURTHER AIDS TO THE DESIGNER, A NUMBER OF TABLES ARE INCLUDED AND ALGORITHMS ARE GIVEN WHICH MAY BE USED TO MATCH THE SWITCH PROPERTIES CLOSELY TO THE DESIGN REQUIREMENTS. SEVERAL METHODS ARE DEVELOPED FOR ECONOMIZING ON THE NUMBER OF DRIVERS USED IN SWITCHES, AND CERTAIN SPECIAL ACCESS SWITCHES ARE TREATED. THE CURRENT KNOWLEDGE IS REVIEWED ON A FAIRLY RECENT AND IMPORTANT CLASS OF ACCESS SWITCHES, KNOWN AS LOAD-SHARING ZERO-NOISE SWITCHES. THESE SWITCHES ARE COMPARED WITH THE ANALOGUE, AND A FUNDAMENTAL THEOREM IS PROVED THAT SUCH SWITCHES CAN HAVE NO MORE OUTPUTS THAN INPUTS. SEVERAL NEW CLASSES OF LOAD-SHARING ZERO-NOISE SWITCHES ARE DEVELOPED AND ANALYZED; IN PARTICULAR, SWITCHES ARE DEVELOPED WHICH FOR A GIVEN NUMBER OF OUTPUTS ALLOW MORE FLEXIBILITY IN THE CHOICE OF THE LOAD-SHARING FACTOR THAN FORMERLY WAS THE CASE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 392

RADIO CORP OF AMERICA CAMDEN N.J. INDUSTRIAL ELECTRONIC  
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*COMPUTER STORAGE DEVICES,  
\*DATA PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS,  
\*DIGITAL COMPUTERS, \*DIODES, COMPUTERS, DESIGN,  
INSTRUMENTATION, MATERIALS, MATHEMATICAL LOGIC,  
RECTIFIERS, SEMICONDUCTORS, SWITCHING CIRCUITS  
IDENTIFIERS: LIGHTNING PROJECT

(U)

(U)

CONTENTS: MILLIMICROSECOND LOGIC CIRCUITS  
CLOCK POWERED CIRCUITS BASEBAND CIRCUITS  
MEMORIES FABRICATION MEMORY TEST MACHINE DESIGN  
SYSTEM STUDIES INSTRUMENTATION

(U)

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800396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-260 463

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*COMPUTERS,  
\*DATA PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS,  
\*STORAGE TUBES, \*TRIODES, CIRCUITS, DESIGN, DIODES,  
ELECTRON TUBES, FERRITES, GALLIUM COMPOUNDS,  
GERMANIUM, MATHEMATICAL ANALYSIS, MATHEMATICAL LOGIC,  
RECTIFIERS, SEMICONDUCTORS, SOLID STATE PHYSICS,

TRANSISTORS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

THIS SUPPLEMENTAL REPORT PRESENTS MATERIAL NOT  
COVERED IN THE MAIN COVER OF IRR-8A. THE MAIN  
TOPICS ARE: EXPLORATORY RESEARCH, DEVICE  
RESEARCH AND PRODUCTION, AND CERTAIN ADDITIONS NOT  
COMPLETED IN TIME FOR INCLUSION IN THE MAIN REPORT.  
THESE COVER AREAS IN CIRCUIT AND MEMORY  
DEVELOPMENT. (AUTHOR)

(U)

UNCLASSIFIED

DEC REPORT BIBLIOGRAPHY SEARCH CONTROL NO: 000396

AD-26P 471

RAITI CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

(U)

IV WARBURTON, PETER I

UNCLASSIFIED REPORT

DESCRIPTORS: +COMPUTER STORAGE DEVICES, +COMPUTERS,  
+DATA PROCESSING SYSTEMS, +DATA STORAGE SYSTEMS,  
CIRCUITS, DESIGN, MATHEMATICAL LOGIC

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

CONTENTS: THE PRINCIPLE OF PROJECT LIGHTNING  
SYSTEM STUDIES INPUT-OUTPUT COMPUTERS A SMALL 48-BIT  
BIT COMPUTER SYSTEM DESIGN OF A LARGE 48-BIT  
COMPUTER

(U)

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UNCLASSIFIED

000396

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-260 782

STANFORD UNIV CALIF STANFORD ELECTRONICS LABS  
THE SELECTION PROBLEM FOR MINIMAL-STATE SEQUENTIAL  
CIRCUITS

(U)

IV DAVIDSON,W.H. I

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*DATA PROCESSING SYSTEMS,  
\*DATA STORAGE SYSTEMS, \*SEQUENCE SWITCHES, \*SWITCHING  
CIRCUITS, DIGITAL SYSTEMS, EQUATIONS, MATHEMATICAL  
LOGIC, MATRIX ALGEBRA, STATISTICAL ANALYSIS,  
THEORY

(U)

A TECHNIQUE IS DISCUSSED THAT WILL SELECT FROM THE  
SET OF MINIMAL-STATE CIRCUITS THOSE WHICH WILL HAVE  
THE LOWEST EXPECTED LOGIC COST. THE RELATION  
BETWEEN INFORMATION CONTENT AND THE EXPECTED COST OF  
THE LOGIC IS CLEARLY DEMONSTRATED FOR THE CASES  
DISCUSSED. THIS INDICATES THAT IF CIRCUITS CAN BE  
DESIGNED THAT HAVE SMALL INFORMATION CONTENTS, THEY  
WILL ALSO HAVE INEXPENSIVE ASSOCIATED LOGIC. IT  
MAY BE POSSIBLE TO FIND DESIGN PROCEDURES THAT WILL  
GENERATE CIRCUITS WITH SMALL INFORMATION CONTENTS AND  
THUS WITH LOW-COST LOGIC. ALSO, IT SEEKS  
REASONABLE TO EXPECT THAT A RELATION SHOULD EXIST  
BETWEEN AN APPROPRIATELY DEFINED INFORMATION CONTENT  
FOR THE CIRCUIT'S INPUT-OUTPUT SEQUENCES AND ITS  
INFORMATION CONTENT. (AUTHOR O

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-261 27:

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC  
PRODUCTS

MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*MANUFACTURING METHODS,  
\*SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC  
CAPACITORS, COMMUNICATION EQUIPMENT, COMPUTERS,  
CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES,  
MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ,  
RELIABILITY, RESISTORS, SEMICONDUCTORS, TESTS, THIN  
FILMS (STORAGE DEVICES), TRANSISTORS (U)

IDENTIFIERS: AN/PRC-81, AN/TYK-9, THIN  
FILMS, THIN FILMS ELECTRONICS (U)

128

UNCLASSIFIED

800394

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-263 109

SPIERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS

U1V

PROJECT LIGHTNING, VOLUME II

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: +DIGITAL COMPUTERS; +ELECTRODEPOSITION;  
+MAGNETIC TAPE; +PROCESSING; COMPUTER LOGIC; COMPUTER  
STORAGE DEVICES; DATA PROCESSING SYSTEMS; DATA STORAGE  
SYSTEMS; FERROMAGNETIC MATERIALS; FILMS; GLASS               (U)  
IDENTIFIERS: LIGHTNING PROJECT                                   (U)

RESEARCH TO SERVE AS THE BASIS FOR THE EVOLUTION OF  
AN UTRALHIGH-SPEED DATA-PROCESSING SYSTEM IS  
SUMMARIZED. THE EFFECTS OF RATE OF DEPOSITION,  
GLASS CLEAVING TECHNIQUES, AND DIFFERENT TYPES OF  
GLASS SUBSTRATES ON THE MAGNETIC PROPERTIES OF  
VACUUM-DEPOSITED PERMALLOY FILMS WERE STUDIED.  
RATES OF DEPOSITION RANGING FROM 15 A/SEC TO 200  
A/SEC WERE FOUND TO HAVE NO EFFECT ON H SUB C  
AND H SUB K WITHIN THE ERROR OF THE EXPERIMENT.  
THE MAGNETOELASTIC STRAIN COEFFICIENT DECREASED  
SLIGHTLY WITH INCREASING RATE IN THIS RANGE.  
OPTIMUM METHODS OF MAKING ELECTRO-DEPOSITED  
PERMALLOY FILMS WERE INVESTIGATED. METHODS WERE  
DEVELOPED TO REDUCE THE COMPOSITION VARIATION.  
MAGNETIC PROPERTIES OF THE PERMALLOY FILMS MADE ARE  
RELATIVELY POOR. BOTH THE ANISOTROPY FIELD AND THE  
COERCIVE FIELD ARE RELATIVELY LARGE, AND MAGNETIC  
PROPERTIES EXHIBIT A LARGE RANGE OVER AN ARRAY.  
OTHER INVESTIGATION CONCERNED APPARATUS AND  
INSTRUMENTATION, MEASUREMENTS, SWITCHING AND  
RESONANCE STUDIES, MATHEMATICS AND LOGIC RESEARCH,  
AND THE LIGHTNING TEST MACHINE. (AUTHOR)                       (U)

UNCLASSIFIED

UFC REPORT RIBLIGRAPHY SEARCH CONTROL NO. 800396

AD-242 110

SHERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS  
DIV  
PROJECT LIGHTNING, VOLUME I  
IV

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*MAGNETIC PROPERTIES, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, DESIGN, FERROMAGNETIC MATERIALS, FILMS

IDENTIFIERS: LIGHTNING PROJECT

(U)  
(U)

CONTENTS: LIGHTNING TEST MACHINE LOGIC LOGIC DESIGN OF THE LIGHTNING TEST MACHINE LOGIC PROGRESS CLOCK FOR JUNE DEMONSTRATION UNIT LOGIC CIRCUITS LOGIC TEST DEVICE SATURATING OR-INVERTER LOGIC DRIVER CIRCUIT CURRENT-STEERING INVESTIGATIONS SINGLE-INVERTER COUNTER MEMORY CIRCUITS SENSE AMPLIFIERS LMT SENSE DIGIT LOOP CIRCUIT JUNE DEMONSTRATION UNIT WORD DRIVER HIGH-SPEED MEMORY SINGLE-BIT SYSTEM MEMORY STACK DESIGN THEORETICAL MAGNETIC FILM CORE INVESTIGATIONS OVERLAY DESIGN PACKAGING INTERCONNECTIONS MODULES JUNE DEMONSTRATION UNIT

(U)

130

UNCLASSIFIED

800396

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-264 007  
INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N.Y.  
PROJECT LIGHTNING (U)  
TIA 61 IV  
CONTRACT: NGSR77208

UNCLASSIFIED REF RT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*COMPUTERS,  
\*CRYOGENICS, \*DATA STORAGE SYSTEMS, \*SUPERCONDUCTORS,  
CIRCUITS, COMPUTER LOGIC, ELECTRICAL PROPERTIES,  
MOLECULAR BEAMS, NUCLEATION, PHYSICAL CHEMISTRY,  
SUPERCONDUCTIVITY, SWITCHING CIRCUITS, THERMAL  
CONDUCTIVITY, THIN FILMS (STORAGE DEVICES), TRIGGER  
CIRCUITS (U)

IDENTIFIERS: LIGHTNING PROJECT (U)

131

UNCLASSIFIED

800294

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-264 227

PHILCO NEWPORT BEACH CA IF AERONUTRONIC DIV  
A MAGNETIC INTEGRATOR FOR THE PERCEPTRON PROGRAM (U)

SEP 61 IV HAWKINS, J. K. (MUNSEY, C. J.)

STAFFORD, R. A. I

REPT. NO. U 1405

CONTRACT: N0NR291200

UNCLASSIFIED REPORT

DESCRIPTORS: \*ANALOG COMPUTERS, \*COMPUTER LOGIC,  
\*DIGITAL COMPUTERS, COMPUTER STORAGE DEVICES, DATA  
STORAGE SYSTEMS, INSTRUCTION MANUALS, INTEGRATORS,  
LEARNING (U)

RESEARCH CONCERNED A SPECIAL-PURPOSE ELECTRONIC  
COMPUTER WHICH CAN BE DESCRIBED AS A HYBRID ANALOG-  
DIGITAL MACHINE WHOSE ELEMENTS POSSESS CERTAIN LOGIC  
AND MEMORY PROPERTIES. THE DIGITAL ELEMENTS OF THE  
COMPUTER ARE UNIT-DELAY MEMORY ELEMENTS WHOSE BINARY  
OUTPUTS ARE LINEAR-LOGIC THRESHOLD FUNCTIONS OF ITS  
INPUTS AND OF ITS ANALOG STORAGE ELEMENTS. THE  
ANALOG ELEMENTS ARE STORAGE DEVICES WHOSE VALUES CAN  
BE CHANGED BY INCREMENTAL AMOUNTS AS A SPECIAL  
FUNCTION OF THE STATES OF THE DIGITAL ELEMENTS AND  
(BINARY) INPUTS TO THE COMPUTER. THE MACHINE  
WAS CONCEIVED AS A GENERAL-PURPOSE EXTENSION OF THE  
PERCEPTRON MODEL. A BASIC FORM OF THE PERCEPTRON  
IS A NETWORK CONSISTING OF A FIRST LAYER OF FIXED  
LINEAR-LOGIC ELEMENTS, FOLLOWED BY ONE OR MORE LAYERS  
OF ADAPTIVE (VARIABLE COEFFICIENT) LINEAR-LOGIC  
ELEMENTS. LOGICAL FEEDBACK (CROSS-COUPLING) IS  
ACHIEVED BY PERMITTING CONNECTIONS FROM SUBSEQUENT TO  
PRIOR LAYERS IN THE NET. THE COMPUTER DESCRIBED  
CONSISTS OF 32 BASIC PERCEPTRON ELEMENTS, TOGETHER  
WITH APPROPRIATE INPUT AND CONTROL CIRCUITRY. BY  
EXTERNAL CONTROL, ANY ONE OR MORE OF THE ELEMENTS MAY  
BE MADE EITHER A FIXED LINEAR-LOGIC ELEMENT OR AN  
ADAPTIVE ONE. BY MEANS OF PROGRAM BOARD WIRING, ANY  
DESIRED NETWORK STRUCTURE CAN BE ARRANGED BY  
INTERCONNECTING SUITABLE ELEMENTS. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-264 355

CALIFORNIA UNIV BERKELEY ELECTRONICS RESEARCH LAB  
A DISCRETE COMPENSATOR FOR SAMPLED-DATA SYSTEMS USING  
MAGNETIC CORES AS STORAGE ELEMENTS (U)

MAY 61 IV LENDARTS, G.G. I

REPT. NO. S60 1356  
CONTRACT AF18 600 1521  
MONITOR AFCSR 1141

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*DELAY LINES, AMPLIFIERS,  
COMPUTER STORAGE DEVICES, COMPUTERS, CONTROL SYSTEMS,  
DATA STORAGE SYSTEMS, DESIGN, FUNCTIONS, MAGNETIC  
CORES, SAMPLING (U)

THE CONSTRUCTION OF A DISCRETE COMPENSATOR TO BE  
USED IN A SAMPLED-DATA CONTROL SYSTEM IS DESCRIBED.  
THE COMPENSATOR EMPLOYS A DISCRETE DELAY LINE  
UTILIZING MAGNETIC CORES TO STORE, IN PULSE-WIDTH-  
MODULATED FORM, THE SAMPLED VALUES OF THE SIGNAL.  
THIS SYSTEM REQUIRES NO RELAYS OR STEPPING  
SWITCHES; EVERYTHING IS SOLID STATE EXCEPT FOR THE  
AMPLIFIERS USED IN THE SAMPLE AND HOLD CIRCUITS,  
DEMODULATION INTEGRATORS, AND COEFFICIENT  
MULTIPLICATION. THIS TAPPED DELAY LINE OPERATES  
LIKE A SHIFT REGISTER. A GROUP OF TOROIDAL CORES  
WITH COILS WOUND ON THEM ARE CONNECTED IN SERIES.  
EACH CORE IS SET TO NEGATIVE SATURATION; THEN A  
SIGNAL IS IMPRESSED ONTO THE FIRST CORE IN THE CHAIN  
FOR A CERTAIN PERIOD OF TIME. NEXT, A RESET SIGNAL  
IS IMPRESSED ONTO THIS FIRST CORE, AND SIMULTANEOUSLY  
A SET SIGNAL OF THE SAME AMPLITUDE IS IMPRESSED ONTO  
THE SECOND CORE. THUS THE FIRST STEP OF THE  
SHIFTING IS ACCOMPLISHED. THIS CAN BE REPEATED AS  
OFTEN AS DESIRED, DEPENDING ONLY ON HOW MANY CORES  
ARE IN THE CHAIN. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-264 436

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

(U)

IV

WARBURTON,PETER;

UNCLASSIFIED REPORT

DESCRIPTORS: •DATA PROCESSING SYSTEMS, •DIODES,  
CIRCUITS, CODING, COMPUTER LOGIC, COMPUTER STORAGE  
DEVICES, COMPUTERS, COSTS, DATA STORAGE SYSTEMS,  
DESIGN, MATHEMATICAL LOGIC, PROGRAMMING (COMPUTERS),  
SWITCHING CIRCUITS

(U)

TWO QUESTIONS ARE RAISED ABOUT THE SCOPE OF  
PROJECT LIGHTNING STUDIES. ONE QUESTION ASKS  
WHY A KILOMEGACYCLE COMPUTER MORE SUITED TO  
SCIENTIFIC WORK HAS NOT COME OUT OF THE STUDIES.  
THE SECOND QUESTION POSES THE PROBLEM OF TYPING  
SEVERAL MACHINES TOGETHER. A SHORT DISCUSSION OF  
THESE TWO QUESTIONS IS INCLUDED. ANOTHER PROBLEM  
IS DISCUSSED AS TO HOW BEST TO PREPARE FOR COST  
ESTIMATING A TUNNEL DIODE COMPUTER. THE  
INSTRUCTION REPERTOIRE FOR THE LARGE MACHINE DESIGN  
WAS REVISED. ALSO, A FIRST DRAFT OF AN INSTRUCTION  
REPERTOIRE FOR A SMALLER, THREEADDRESS MACHINE IS  
PRESENTED. WORK WAS BEGUN IN FLOW CHARTING THE  
INSTRUCTIONS AND TRIAL PROGRAMMING INPUT-OUTPUT  
ROUTINES. (AU:HOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-264 427

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*DATA PROCESSING SYSTEMS, CIRCUITS,  
COMPUTER STORAGE DEVICES, COMPUTERS, DATA STORAGE  
SYSTEMS, DESIGN, DIGITAL COMPUTERS, DIODES,  
INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS, SWITCHING  
CIRCUITS

(U)

INVESTIGATIONS OF SURFACE SENSING OF MAGNETIC FLUX  
SWITCHING HAVE CONTINUED BUT THE RESULTS ARE STILL  
INCONCLUSIVE, A MAJOR PROBLEM IS EXCESSIVE  
COUPLING OF THE SENSE LOOP TO THE DRIVE LINE.  
METHODS FOR CANCELLING THIS COUPLING ARE BEING  
INVESTIGATED. THE APPLICATION OF A TRANSVERSE  
FIELD TO A FERRITE ELEMENT HAS BEEN FOUND TO REDUCE  
THE SWITCHING TIME SIGNIFICANTLY WHILE LOWERING THE  
OUTPUT VOLTAGE ONLY SLIGHTLY. THE USE OF A  
PRECISION MASKING JIG HAS CONTRIBUTED TO CONSIDERABLE  
PROGRESS IN THE FABRICATION OF THE CLOSE-SPACED  
STRUCTURES REQUIRED FOR HIGH-SPEED OPERATION. A  
STUDY OF THE ALLOYING TEMPERATURE EFFECT ON THE  
ELECTRICAL CHARACTERISTICS OF 50-MA GE TUNNEL  
DIODES SHOWED A SHARP INCREASE OF SPEED RATIO WITH  
LOWER ALLOYING TEMPERATURES. THIS APPEARS TO BE  
CONSISTENT WITH PREDICTIONS. ELECTROMAGNETIC  
DELAYLINE STORAGE TECHNIQUES EMPLOYING BALANCED-PAIR  
TUNNEL DIODE LOGIC CIRCUITRY HAVE BEEN INVESTIGATED.  
ASSUMING 1-KMC OPERATION OF THE BALANCED-PAIR  
CIRCUITS, THE STUDY INDICATES THAT A 1024, 48-BIT  
DELAY-LINE MEMORY WITH 16 NS CYCLE TIME WILL REQUIRE  
LESS THAN ONE TUNNEL DIODE PER STORED BIT.

(U)

(AUTHOR)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-264 439

NACO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA  
PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS, \*DIGITAL  
COMPUTERS, CIRCUITS COMPUTERS, DESIGN, DIPOLE  
ANTENNAS, INSTRUMENTATION, RECTIFIERS, SEMICONDUCTORS,  
SWITCHING CIRCUITS  
IDENTIFIERS: LIGHTNING PROJECT

(U)

(U)

EFFORTS WERE DIRECTED TOWARD THE GOALS OF REDUCING  
TO PRACTICE SEVERAL CIRCUIT APPROACHES. THE CIRCUIT  
WORK IS NOW BEING DONE NOT ONLY AT FULL RISE TIME  
SPEED BUT AT REPETITION RATES IN THE HUNDREDS OF  
MEGACYCLES. AN ATTEMPT TO FIND THE LIMIT OF MEMORY  
REGENERATION SPEED FOR AN INDIVIDUAL CELL AND READ-  
WRITE AMPLIFIER RESULTED IN READ-WRITE TIMES OF 5  
NANOSECONDS. THE LEADING CIRCUIT APPROACHES WERE  
SUBMITTED TO INTENSE SCRUTINY FROM THE LOGIC POINT OF  
VIEW. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800996

AD-264 787

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC  
PRODUCTS  
MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*MANUFACTURING METHODS,  
\*SUBMINIATURE ELECTRONIC EQUIPMENT, CERAMIC  
CAPACITORS, COILS, COMMUNICATION EQUIPMENT, COMPUTERS,  
CONTAINERS, CRYSTAL HOLDERS, CRYSTALS, DESIGN, DIODES,  
ELECTROLYTIC CAPACITORS, ELECTRONIC EQUIPMENT,  
MATERIALS, PACKAGED CIRCUITS, PRODUCTION, QUARTZ,  
RESISTORS, SEMICONDUCTORS, TESTS, THIN FILMS (STORAGE  
DEVICES), TRANSISTORS

(U)

IDENTIFIERS: AN/PRC-91, THIN FILMS

(U)

THE REMAINDER OF THE 640 MICRO-MODULES REQUIRED FOR  
CONSTRUCTION OF SUBASSEMBLIES AND FOR EVALUATION  
TESTS WERE MADE AVAILABLE. A PROTOTYPE AND FINAL-  
GRADE TRIMMER CAPACITORS RATED AT 1.0-TO-8  
MICROMICROFARADS AND 1.0-TO-11 MICROMICROFARADS WERE  
CONSTRUCTED SUCCESSFULLY. THE FIRST 1000 HOURS OF  
A 2000-HOUR LIFE TEST AT 85 C WERE COMPLETED WITH  
NO REPORTED FAILURES. ASSEMBLY OF PROTOTYPE  
MODULES FOR THE AN/TYK-9 ( ) (MICROPAC)  
COMPUTER WAS INITIATED. NEWLY DEVELOPED CERAMIC  
TRIMMER CAPACITORS WERE INTRODUCED IN THE AN/PRC-  
91 RADIO SET. MICROELEMENT TRANSISTORS IN THE NEW  
MINIATURE PACKAGE ARE USED IN ALL MICRO-MODULES.

(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO, 800396

AD-266 580

NATIONAL BIOMEDICAL RESEARCH FOUNDATION SILVER SPRING  
MD

COLLECTED PAPERS ON SWITCHING CIRCUIT THEORY AND  
LOGICAL AND SYSTEMS DESIGN (U)

OCT 61 IV LEDLEY,ROBERT S.;BOYLE,DON R.V.  
WILSON,JAMES R.;  
CONTRACT: NONR326500

UNCLASSIFIED REPORT

DESCRIPTORS: \*DIGITAL SYSTEMS, \*SWITCHING CIRCUITS,  
\*SYNCHRONIZATION (ELECTRONICS), ALGEBRA, AUTOMATIC,  
CIRCUITS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,  
COMPUTERS, CYBERNETICS, DATA STORAGE SYSTEMS, DESIGN,  
DIGITAL COMPUTERS, ELECTRICAL NETWORKS, MATHEMATICAL  
LOGIC, MATRIX ALGEBRA, MEMORY, PROGRAMMING  
(COMPUTERS), PULSE COMMUNICATION SYSTEMS, SEQUENCES,  
TABLES, THEORY, TIME, TRANSFORMATIONS  
(MATHEMATICS) (U)

CONTENTS: BOOLEAN MATRICES APPLIED TO SEQUENTIAL  
CIRCUIT THEORY AND THRESHOLD LOGICS MULTIVALUED  
LOGIC DEVICES FOR SIMULATING THRESHOLD NEURONS  
ORGANIZATION OF LARGE MEMORY SYSTEMS AN  
ALGORITHM FOR RAPID BINARY DIVISION (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-268 812

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS

DIV

PROJECT LIGHTNING, VOLUME I

IV

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS, \*DIGITAL COMPUTERS, \*MAGNETIC TAPE, AMPLIFIERS, CIRCUITS, COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS, FILMS, TRANSISTORS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

CONTENTS: HIGH SPEED MEMORY HIGH SPEED MEMORY STACK DESIGN JUNE DEMONSTRATION UNIT (JDU) SENSE LINE ARRANGEMENTS SENSE AMPLIFIERS HIGH LEVEL WORD TRANSLATION SEARCH MEMORY READ CIRCUITS WRITE CIRCUITS LOGIC CIRCUITS JDU CLOCKING JDU POWER TRANSISTOR MEASUREMENTS RCTL CIRCUIT LOGIC CIRCUIT DESIGN

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-269 842

CATHOLIC UNIV OF AMERICA WASHINGTON D C  
FERROELECTRICS AS A POSSIBLE COMPUTER ELEMENT (U)

FCT 61 IV PULVARI,CHARLES F. I

CONTRACT AFDD 616 7423

MONITOR ASD TR61 321

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*DIGITAL COMPUTERS, \*FERROELECTRIC MATERIALS, COMPUTER LOGIC, ELECTRICAL PROPERTIES, HIGH TEMPERATURE RESEARCH, NON-DESTRUCTIVE TESTING, POLARIZATION, SWITCHING CIRCUITS, TESTS (U)

RESEARCH ON HIGH TEMPERATURE FERROELECTRIC STORAGE MEDIA LED TO THE DISCOVERY OF A CLASS OF FERROELECTRIC MATERIALS WHICH REQUIRE A MINIMUM THRESHOLD FIELD FOR SWITCHING. THIS PROPERTY WAS HERETOFORE NOT OBSERVED IN ORDINARY FERROELECTRICS AND COMPARES WITH SIMILAR PROPERTIES FOUND IN FERRITE CORES. WORK WAS CONDUCTED ESSENTIALLY TO EXPLOIT THE PHENOMENON OF FERROELECTRICITY FOR APPLICATION IN COMPUTER LOGICAL DEVICES. THE FEASIBILITY OF PREPARING CAPACITORS HAVING A FERROELECTRIC AS A DIELECTRIC WAS INVESTIGATED. LIMITING ELECTRICAL PARAMETERS OF THE DEVICE WERE DETERMINED. FINALLY, A NOVEL NON-DESTRUCTIVE READOUT METHOD WAS INVESTIGATED USING ELECTROMAGNETIC INTERFEROMETER TECHNIQUES. WITH THE EXPERIMENTAL DEVICE CONSTRUCTED, THE BEST SIGNAL-TO-NOISE RATIO OBTAINED WAS 6:1. IT IS POSSIBLE TO OBTAIN MILLIONS OF READOUTS FROM A FERROELECTRIC CAPACITOR WITHOUT DESTROYING THE STATE OF POLARIZATION OF THE FERROELECTRIC CAPACITOR. (AUTHOR) (U)

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UNCLASSIFIED

800296

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-269 496

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING

IV

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: \*CIRCUITS, \*COMPUTERS, \*DATA PROCESSING  
SYSTEMS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,  
DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM

ADMINISTRATION

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

WORK WAS DIRECTED TOWARD SETTING THE STAGE FOR THE  
CONSTRUCTION OF A SUBSYSTEM WHICH WILL DEMONSTRATE  
THE FEASIBILITY OF THE TECHNIQUES DEVELOPED DURING  
THE PREVIOUS PERIODS. IT WAS DECIDED THAT THE BEST  
CHOICE FOR LOGIC CIRCUITRY LAY IN THE D-C DRIVEN  
CLASSIFICATION. THE BROAD GROUNDWORK FOR ALL  
CONSTRUCTION DECISIONS WAS MADE AND MANY DETAILED  
ONES HAVE BEEN FIRMED UP. INDIVIDUAL MONOSTABLE  
AMPLIFIERS OF THE TYPE CONSIDERED TO BE THE BACKBONE  
OF THE D-C APPROACH HAVE BEEN OPERATED AT REPETITION  
RATES AS HIGH AS 940 MC. ALL THE CIRCUIT TYPES TO  
BE USED IN THE MEMORY WORK HAVE BEEN OPERATED  
INDIVIDUALLY AND MANY HAVE BEEN PROVED BY USE IN THE  
NINE-WORD TEST MEMORY. (AUTHOR)

(U)

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UNCLASSIFIED

800296

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-269 697  
RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS  
PROJECT LIGHTNING  
IV WARBURTON, PETER J

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: CIRCUITS, COMPUTER LOGIC, COMPUTER  
STORAGE DEVICES, COMPUTERS, DATA PROCESSING SYSTEMS,  
DATA STORAGE SYSTEMS, DIODES, RESEARCH PROGRAM  
ADMINISTRATION

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

APPLICATION OF THE PROCESSOR SYSTEM HAS BEEN  
MODIFIED SOMEWHAT IN THAT THE KILOMEGACYCLE COMPUTER  
IS TO BE CONSIDERED PART OF A LARGER DATAPROCESSING  
SYSTEM AND IS NOT INTENDED PRIMARILY FOR ARITHMETIC  
PROBLEMS. THE QUESTION OF CONVENTIONAL, VERSUS  
UNCONVENTIONAL DESIGN IS DISCUSSED. ANOTHER  
BOUNDARY, THAT OF THE EFFECT OF TUNNEL-DIODE  
COMPONENTS, HAS BEEN MODIFIED IN THAT THE LOW FAN  
POWER OF TUNNEL DIODE CIRCUITS CONFLICTS WITH THE  
DESIRE FOR COMPLEX AND SOPHISTICATED LOGIC.  
VARIOUS ASPECTS OF INPUT/OUTPUT ARE ALSO DISCUSSED,  
AND THE CONTROL SCHEME IS PRESENTED. FINALLY, THE  
CHARACTERISTICS OF THREE PROPOSED COMPUTERS (FROM  
LARGE TO SMALL) ARE SET FORTH AS A FAMILY OF  
DESIGNS. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-271 084  
RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC  
PRODUCTS  
FLUX LOGIC PERMALLOY SHEET MEMORY (U)  
IV BRIGGS,G+R, TORREY,R,D,I

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*DIGITAL COMPUTERS, COMPUTER LOGIC, FILMS, IRON ALLOYS, MAGNETIC CORES, MANUFACTURING METHODS, MINIATURE ELECTRONIC EQUIPMENT, NICKEL ALLOYS, SHEETS, SWITCHING CIRCUITS, TEST EQUIPMENT, TEST SETS (U)

EFFORTS ARE BEING MADE TO DEVELOP THIN PERMALLOY SHEET MEMORY ARRAYS UTILIZING MULTI-APERTURED ELEMENTS OPERATED IN THE INHIBITED-FLUX MODE, AND TO DEVELOP ASSOCIATED MEMORY CIRCUITS. THE CIRCUITS WILL TAKE ADVANTAGE OF MICROMODULE AND OTHER MINIATURIZATION TECHNIQUES, AND A SMALL SYSTEM WILL BE CONSTRUCTED TO DEMONSTRATE THE FEASIBILITY OF THIS TYPE OF MEMORY. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 723

INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y  
PROJECT LIGHTNING  
IV

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: •COMPUTER STORAGE DEVICES, •CRYOGENICS,  
•DATA PROCESSING SYSTEMS, •DATA STORAGE SYSTEMS,  
•SWITCHING CIRCUITS, CIRCUITS, COMPUTERS, DESIGN,  
MATERIALS, MATHEMATICAL LOGIC, MEASUREMENT,  
SUPERCONDUCTORS, THERMAL CONDUCTIVITY, THIN FILMS  
(STORAGE DEVICES), TRIGGER CIRCUITS

(U)

IDENTIFIERS: THIN FILMS, THIN FILMS  
ELECTRONICS

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-272 736

INTERNATIONAL BUSINESS MACHINES CORP POUGHKEEPSIE N Y  
PROJECT LIGHTNING (U)  
IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*CRYOGENICS,  
\*DATA PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS,  
\*SWITCHING CIRCUITS, CIRCUITS, DESIGN, INDIUM,  
MATERIALS, MATHEMATICAL LOGIC, SUPERCONDUCTORS, THIN  
FILMS (STORAGE DEVICES), TIN (U)

IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS (U)

GENERAL RESULTS ARE PRESENTED ON THE  
CHARACTERISTICS OF TIN AND INDIUM CRYOTRONS  
EVAPORATED IN CONVENTIONAL EVAPORATORS WITH NO  
SPECIAL TECHNIQUES SUCH AS SUBSTRATE HEATING OR  
PRENUCLEATION. INDIUM FROM THE CONVENTIONAL SYSTEM  
IS COMPARED WITH FILMS FROM MORE ELABORATE SYSTEMS.  
INDIUM FROM THE CONVENTIONAL SYSTEM COMPARED  
FAVORABLY WITH THAT PRODUCED IN AN ULTRA-HIGH VACUUM  
SYSTEM. REPRODUCIBILITY RESULTS FOR FOUR IN-LINE  
CRYOTRONS ON ONE SUBSTRATE INDICATE THAT THE  
CRYOTRONS CANNOT BE INTERCONNECTED WITH A SUFFICIENT  
MARGIN OF SAFETY ON THE BIAS OR OVERDRIVE ON THE  
CONTROL WHEN MAXIMUM OPERATING SPEED IS DESIRED.  
THE CRITICAL CURRENTS FOR A NUMBER OF TIN AND  
INDIUM FILMS ARE PLOTTED AS A FUNCTION OF THE RATIO  
OF FILM THICKNESS TO PENETRATION DEPTH. THE GAIN  
CHARACTERISTICS OF UNITY CROSSING CROSSED-FILM  
CRYOTRONS ARE DISCUSSED. (AUTHOR) (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 748  
SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS  
DIV  
PROJECT LIGHTNING, VOLUME 1. (U)  
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 8, VOL.  
1, 1 JUN-61 AUG 61 ON PHASE 2.  
AUG 61 49P  
REPT. NO. PX-1599-5-VOL-1  
CONTRACT: NOBSR-77521

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA  
PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS, \*DIGITAL  
COMPUTERS, \*MAGNETIC TAPE, AMPLIFIERS, CIRCUITS,  
COMPUTER LOGIC, DESIGN, FERROMAGNETIC MATERIALS,  
FILMS, THIN FILMS (STORAGE DEVICES), TRANSISTORS (U)  
IDENTIFIERS: THIN FILMS, THIN FILMS (U)  
ELECTRONICS (U)

CONTENTS: SEARCH MEMORY JDU CLOCKING POWER  
SUPPLY SYSTEM FOR THE JDU PACKAGING JDU LOGIC  
MODULE TEST FILM SPOT OUTPUT SIGNAL INPUT-OUTPUT  
EQUIPMENT FOR THE LTM PHILADELPHIA PROGRESS REPORT (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-272 749

SPERRY RAND CORP ST PAUL MINN UNIVAC DEFENSE SYSTEMS

DIV

PROJECT LIGHTNING. VOLUME II.

(U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 5, VOL.

2, 1 JUN-71 AUG 61 ON PHASE 2.

AUG 61 57P

REPT. NO. PX-1599-5-VOL-2

CONTRACT: NOBSR-77921

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*DIGITAL COMPUTERS, \*MAGNETIC CORES, \*MAGNETIC TAPE, \*THIN FILMS (STORAGE DEVICES), COMPUTER LOGIC, DATA PROCESSING SYSTEMS, ELECTRODEPOSITION, FERROMAGNETIC MATERIALS, GLASS, MANUFACTURING METHODS, METALLIC SMOKE DEPOSITS, METALS, PROCESSING

(U)

IDENTIFIERS: LIGHTNING PROJECT, THIN FILMS

(U)

CONTENTS: FILM CORE PROGRAM FILM DEPOSITION TECHNIQUES APPARATUS AND INSTRUMENTATION FILM PROPERTY MEASUREMENTS SWITCHING AND RESONANCE STUDIES APPLICATIONS MATHEMATICS AND LOGIC RESEARCH IMPROVED GENERAL-PURPOSE LOGIC ARRAY MAJORITY-LOGIC COMPARATOR MAJORITY-MINORITY CONVERSION THEOREM LIGHTNING TEST MACHINE HIGH-SPEED MEMORY STACK DESIGN SENSE AMPLIFIER HIGH-LEVEL WORD TRANSLATION FILM STRIPS REPRODUCIBILITY OF ELECTROPLATED THIN FILMS

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-272 785

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB  
A SOLID STATE BUFFER-MEMORY SYSTEM TO HANDLE RANDOMLY  
TRANSMITTED INFORMATION (U)

IV HOROWITZ,RICHARD M. I

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMMUNICATION THEORY, \*COMPUTER LOGIC,  
\*COMPUTER STORAGE DEVICES, \*DATA PROCESSING SYSTEMS,  
\*DATA STORAGE SYSTEMS, ANALYSIS, CODING, COMPUTERS,  
DATA TRANSMISSION SYSTEMS, ERRORS, MAGNETIC TAPE,  
PROBABILITY, SEQUENCES, SWITCHING CIRCUITS, TIME  
INTERVAL COUNTERS (U)

THE DIGITAL DATA HANDLING SECTION IN A WEST  
FORD RECEIVER SYSTEM PERFORMS THE SPECIFIC  
FUNCTIONS OF TEMPORARILY STORING AND THEN  
TRANSFERRING ERROR AND CERTAIN SPECIAL DATA TO A HIGH  
SPEED MAGNETIC TAPE UNIT FOR ULTIMATE COMPUTER DATA  
PROCESSING. A FIXED 16-BIT BINARY WORD IS  
REPEATEDLY TRANSMITTED OVER THE DIPOLE CHANNEL. THE  
RETURNING BITS OF INFORMATION ARE SEQUENTIALLY  
COMPARED FOR ERRORS WITH REPRODUCTIONS OF THE  
TRANSMITTED WORD. DISCREPANCIES BETWEEN THE  
TRANSMITTED AND RECEIVED BITS THUS DERIVED BY  
COMPARISON ARE ASSEMBLED FOR SUBSEQUENT STORAGE AND  
RECORDING. IN ADDITION TO THE ERROR WORD JUST  
MENTIONED, THREE OTHER WORD TYPES --PARAMETER,  
MEASUREMENT AND RADAR, EACH CONTAINING 96 BITS OF  
INFORMATION PERTINENT TO OTHER ASPECTS OF THE  
COMMUNICATION EXPERIMENT, ARE ALSO ASSEMBLED FOR  
PROCESSING. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-274 177

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER LOGIC, \*COMPUTER STORAGE  
DEVICES, \*DATA STORAGE SYSTEMS, \*DIODES, \*GATES  
(CIRCUITS), DELAY CIRCUITS, DIGITAL COMPUTERS,  
PROGRAMMING (COMPUTERS), TRANSISTORS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

THE QUARTER'S WORK CONCENTRATED UPON COMPLETING THE  
FROZEN DESIGNS, BOTH ELECTRICAL AND MECHANICAL, AND  
BEGINNING CONSTRUCTION OF THE SUBSYSTEM. TO BE  
COMPLETED DURING PHASE III B, THIS SUBSYSTEM WILL  
DEMONSTRATE FEASIBILITY OF THE TECHNIQUES DEVELOPED  
DURING THE COURSE OF PROJECT LIGHTNING. THE  
WORST-CASE DESIGNS OF THE LOGIC SUBSYSTEM WERE  
FINALIZED, AND ALL TYPES OF WAFERS WERE CONSTRUCTED  
AND TESTED. PERFORMANCE OF THESE WAFERS WAS  
ESSENTIALLY IN AGREEMENT WITH ANALYTIC CALCULATIONS.  
IT IS BELIEVED THAT THE SUBSYSTEM CAN BE BUILT WITH  
NO FURTHER KEY INVENTION REQUIRED. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-275 169

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC  
PRODUCTS

MICRO-MODULE PRODUCTION PROGRAM

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*MANUFACTURING METHODS,  
\*MICROMINIATURIZATION (ELECTRONICS), CAPACITORS,  
CIRCUITS, COILS, COMPUTER STORAGE DEVICES, CRYSTALS,  
DATA STORAGE SYSTEMS, DIGITAL COMPUTERS, DIODES,  
ELECTRONIC EQUIPMENT, ENCAPSULATION, LIFE EXPECTANCY,  
PRODUCTION, RELIABILITY, RESEARCH PROGRAM  
ADMINISTRATION, RESISTORS, SEMICONDUCTORS, SWITCHING  
CIRCUITS, TRANSFORMERS, TRANSISTORS

(U)

IDENTIFIERS: AN/PRC-91

(U)

THE INITIAL PROGRAM TO ESTABLISH FEASIBILITY AND  
RELIABILITY OF MICRO-MODULES OF A LIMITED RANGE AND  
SELECTION OF MICROELEMENTS WAS COMPLETED. EFFORT  
WAS CONTINUED TO IMPROVE AND EXTEND INDUCTOR  
PARAMETERS, TO DEVELOP CERAMIC TRIMMER CAPACITORS  
WHICH MEET THE REQUIREMENTS OF COMMUNICATION MICRO-  
MODULES, AND TO IMPROVE PROCESSES FOR MAKING MICRO-  
MODULES. ALL WORK ON MICRO-MODULE ASSEMBLY WAS  
COMPLETED. PROTO TYPE PULSE TRANSFORMERS WERE  
PLACED ON LIFE TEST. A 455 KC INDUCTOR WAS  
DESIGNED ON A POWDERED IRON CORE AND TESTING OF THE  
UNIT WAS INITIATED. IN THE OBJECTIVE TO DESIGN AND  
BUILD TRANSMITTER AND RECEIVER MICRO-MODULES FOR  
RADIO SET AN/PRC-91 AND MICRO-MODULES FOR THE  
MICROPAC COMPUTER, 93 OF THE REQUIRED 96 MICRO-  
MODULES WERE DELIVERED. THREE ENGINEERING MODELS OF  
THE TRANSMITTER, AND ONE MODEL OF THE RECEIVER, OF  
THE AN/PRC-91 RADIO SET WERE TESTED. A  
BREADBOARD MODEL OF A MICROPAC COMPUTER WITH A  
TEMPERATURE CONTROL SYSTEM INCLUDING A THERMOELECTRIC  
COOLING SYSTEM WAS FABRICATED AND TESTED.

(AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-279 310

REMINGTON RAND UNIVAC DIV SPERRY RAND CORP PHILADELPHIA

PA

THE PREPARATION AND CHARACTERISTICS OF Ti/N  
FERROMAGNETIC FILMS

(U)

IV MATHIAS, JOSEPH S. FREITAG, WALTERS

KRIESSMAN, CHARLES J.

REPT. NO. 970

CONTRACT: AF19 604 4976

MONITOR: AFCRL 970

UNCLASSIFIED REPORT

DESCRIPTORS: \*FERROMAGNETIC MATERIALS, \*THIN FILMS  
(STORAGE DEVICES), ACETYL RADICALS, COMPUTER STORAGE  
DEVICES, COMPUTERS, DATA STORAGE SYSTEMS,  
DECOMPOSITION, ELECTRODEPOSITION, ELECTROPLATING,  
FILMS, IRON, IRON COMPOUNDS, MAGNETIC PROPERTIES,  
MANUFACTURING METHODS, METALLIC SHOKE DEPOSITS,  
METALORGANIC COMPOUNDS, NICKEL, NICKEL COMPOUNDS,  
SOLUTIONS, SULFATES, VAPOR PLATING (U)

INVESTIGATIONS INDICATE THAT THE THERMAL  
DECOMPOSITION OF ACETYLACETONATES IS NOT A FEASIBLE  
METHOD FOR PRODUCING Fe-Ni THIN FILMS BECAUSE THE  
Ni ACETYLACETONATE DECOMPOSES AND POLYMERIZES,  
GREATLY REDUCING VAPOR PRESSURE. THIN Fe FILMS  
CAN BE EASILY FORMED BY THIS PROCESS. THERMAL  
DECOMPOSITION OF CARBONYL VAPORS OF Ni AND Fe  
PRODUCE MAGNETIC Fe-Ni FILMS WHICH USUALLY HAVE  
HIGH COERCIVITY. HOWEVER, ANNEALING THESE FILMS IN  
WET H2 LOWERS THE COERCIVITY AND PRODUCES FILMS THAT  
CAN BE USED FOR COMPUTER ELEMENTS. SOME UNUSUAL  
EFFECTS, TERMED VARIABLE-THRESHOLD PROPERTIES, WERE  
NOTED IN FILMS PREPARED BY THIS METHOD. THE  
REPRODUCIBILITY OF FILMS HAVING THESE PROPERTIES IS  
POOR. ELECTRODEPOSITION OF THIN MAGNETIC FILMS  
FROM AQUEOUS SOLUTION OF Ni AND Fe SULFATES  
PROVED TO BE THE MOST USEFUL AND REPRODUCIBLE  
TECHNIQUE. FILMS HAVING A THICKNESS OF 1000  
ANGSTROMS CAN BE PRODUCED WITH A COERCIVE FORCE OF  
2.2 OERSTEDS, AND AN ANISOTROPY FIELD OF 4 OERSTEDS.  
THESE FILMS, WHICH SWITCH IN A ROTATABLE MODE UNDER  
THE INFLUENCE OF A DRIVE FIELD AND CROSS FIELD, WERE  
(AUTHOR) USED SUCCESSFULLY AS COMPUTER MEMORY ELEMENTS. (U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-27A 329

ROHE AIR DEVELOPMENT CENTER GRIFFISS AFB N Y  
THEORY OF A MULTIPLE TAPE QUEUING SYSTEM AND ITS  
APPLICATION TO ELECTRONIC SYSTEMS (U)  
IV MORENOFF, EDWARD/MCLEAN, JOHN B+I

UNCLASSIFIED REPORT

DESCRIPTORS: •DATA STORAGE SYSTEMS, •MAGNETIC TAPE,  
DATA PROCESSING SYSTEMS, PROBABILITY (U)

A STORAGE TECHNIQUE KNOWN AS RAPTAP (RAPID  
ACCESS PARALLEL TAPE) WAS CONCEIVED AT RADC  
IN AN EFFORT TO PROVIDE A STORAGE MEDIUM WHICH HAS  
BOTH A GREATLY REDUCED ACCESS TIME TO DESIRED DATA  
AND ECONOMY OF OPERATION. THESE OBJECTIVES ARE  
SATISFIED BY A RAPTAP INNOVATION WHICH RESULTS IN  
THE ABILITY TO SIMULTANEOUSLY MOVE ALL TAPE UNITS  
UNDER THE CONTROL OF A SINGLE TAPE CONTROL UNIT, AND  
IN THE ABILITY TO MOVE MAGNETIC TAPE AT RAPID REWIND  
TAPE SPEEDS OVER SECTIONS OF TAPE KNOWN NOT TO  
CONTAIN DESIRED DATA, RATHER THAN AT THE NORMAL  
SLOWER SEARCH SPEEDS. THE SELECTION AND RETRIEVAL  
OF DATA FROM THE RAPTAP STORAGE SYSTEM IS  
DIRECTLY ANALOGOUS TO THE SELECTION OF DATA FROM DISC  
FILE SYSTEMS. THE RAPTAP TECHNIQUE IS DESCRIBED  
IN THIS REPORT, AND THE ECONOMY OF OPERATION AND THE  
REDUCTION OF ACCESS TIME TO DESIRED DATA ARE  
CONSIDERED IN TERMS OF THE FOLLOWING MODES OF  
QUERYING AN ORDERED ARRAY OF DATA: (1) RANDOM  
QUERIES; (2) BATCHED QUERIES; AND (3)  
INDEPENDENT GROUPS OF RANDOM QUERIES, EACH GROUP  
CONTAINING RELATED SUBQUERIES. A NEW MEANS OF  
ORGANIZING THE ORDERED ARRAYS OF DATA IS DESCRIBED  
WHICH PROVIDES FOR IMPROVED SEARCHES OF THE QUERIES,  
DESCRIBED IN (2) ABOVE, BY CAPITALIZING ON A  
UNIQUE CHARACTERISTIC OF THE RAPTAP SYSTEM.

(AUTHOR) (U)

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DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-282 A18

BURROUGHS CORP PHILADELPHIA PA

MAGNETIC PARAMETRON LOGIC ELEMENTS

(U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. NO. 1, 1 APR-

20 JUN 62.

JUN 62 IV EINHORN,S.N.(POWELL,W.S.)

CONTRACT: DA36 0395C09204

PROJ: 3A99-15-001-03

UNCLASSIFIED REPORT

DESCRIPTORS: +COMPUTER LOGIC, +DIGITAL COMPUTERS,  
+MICROMETERS, MAGNETIC TAPE, PRINTED CIRCUITS, THIN  
FILMS (STORAGE DEVICES)

(U)

IDENTIFIERS: THIN FILMS, THIN FILMS ELECTRONICS,  
PARAMETRONS

(U)

RESEARCH IS BEING DIRECTED TOWARD THE DEVELOPMENT  
OF ADVANCED PARAMETRON ELEMENTS, CONFIGURATIONS,  
CIRCUIT ARRANGEMENTS, AND MODES OF OPERATION SUITED  
TO PERFORM LOGIC FUNCTIONS IN DATA PROCESSING SUB-  
SYSTEMS. EMPHASIS IS PLACED ON THE REALIZATION OF  
RELIABLE MAGNETIC-FILM PARAMETRONS WHICH LEND  
THEMSELVES TO LARGE SCALE PRODUCTION AT LOW COST.  
A PART OF THE PARAMETRON DESIGN EFFORT WAS A STUDY  
OF DEMAGNETIZING FIELDS, WHICH POINTS TO THE  
FEASIBILITY OF SMALL COILS WITH 2 BY 2 MM FILM  
ELEMENTS. INDUCTANCE MEASUREMENTS AND OPERATIONAL  
TESTS OF PARAMETRON COILS HAVE, SO FAR, LED TO AN  
OPTIMUM DESIGN HAVING 34 TURNS OF NO. 44 WIRE.  
HOWEVER, AN EFFORT IS UNDERWAY TO REDUCE THE  
NUMBER OF TURNS, SINCE THE CAPACITANCE REQUIRED FOR  
RESONANCE AT THE 25-MC SIGNAL FREQUENCY IS SMALL  
COMPARED TO THE ESTIMATED WIRING CAPACITANCE. A  
MODEL INCORPORATING PROPOSED PACKAGING TECHNIQUES WAS  
CONSTRUCTED. THE TECHNIQUES INCLUDE A  
PRINTED CIRCUIT BOARD FOR LOGIC INTERCONNECTIONS, A  
GROUND PLANE WHICH BOTH COMPLETES THE LOGIC SIGNAL  
PATHS AND SHIELDS THE SIGNAL CIRCUITS FROM THE PUMP  
FIELDS, AND A MINIATURE PRINTED CIRCUIT PARAMETRON  
COMPONENT BOARD. (AUTHOR)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-284 290

CALIFORNIA UNIV BERKELEY INST OF ENGINEERING  
RESEARCH  
A SPIN-ECHO MEMORY FOR A CARRIER TYPE DIGITAL  
COMPUTER

(U)

IV WANLASS,L,K+1

REF ID: S6D 17992767  
CONTRACT AF49 628 102  
MONITOR AFOSR 2767

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE  
SYSTEMS, BARIUM COMPOUNDS, CALCITE, CRYOGENICS,  
DIGITAL COMPUTERS, NUCLEAR SPINS, OSCILLATORS, RUBY,  
SILICON, SULFATES

(U)

ELECTRON SPIN-ECHO WAS STUDIED AS A POSSIBLE  
CARRIER DIGITAL COMPUTER MEMORY ELEMENT AT MICROWAVE  
FREQUENCIES. A GENERAL STUDY IS MADE OF SOLID  
STATE PARAMAGNETIC CRYSTALS AS POSSIBLE STORAGE  
MATERIALS. SPIN-SPIN AND SPIN-LATTICE RELAXATION  
TIMES ARE CONSIDERED IN GENERAL, AND WERE MEASURED  
FOR CALCITE, SILICON, AND OTHER CRYSTALS. A STUDY  
WAS MADE OF CROSS-RELAXATION IN CALCITE USING A  
STIMULATED SPIN-ECHO TECHNIQUE. A DECREASE IN THE  
POTENTIAL STORAGE TIME OF THIS CRYSTAL BY A FACTOR OF  
8000 IS REPORTED DUE TO THIS RELAXATION MECHANISM.  
DETAILED MEASUREMENTS WERE MADE ON THE SPINECHO  
SIGNALS OBTAINABLE AT MICROWAVE FREQUENCIES, AND  
USABLE AMPLITUDE ECHOES ARE REPORTED FOR MANY  
CRYSTALS AND IMPURITY CONCENTRATIONS. A STUDY OF  
NOISE SOURCES AND SIGNAL TO NOISE RATIOS WAS MADE.  
AN ORIGINAL SYSTEM FOR STORING THE PHASE OF PHASE  
SCRIPT INFORMATION PULSES WAS INVESTIGATED. A  
COMPLETE CARRIER COMPUTER REGENERATIVE MEMORY SYSTEM  
USING TWO SPIN-ECHO DEVICES AND A SINGLE CONNECTING  
CHANNEL WAS CONSIDERED. THE STORAGE CAPACITY OF  
THE MEMORY DEVICE WAS THEORETICALLY DETERMINED.

(AUTHOR)

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LDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800294

AD-284 973

MASSACHUSETTS INST OF TECH CAMBRIDGE ELECTRONIC SYSTEMS

LAB

SOME ASPECTS OF THE STATE ASSIGNMENT PROBLEM FOR  
SEQUENTIAL CIRCUITS

(U)

SEP 62 IV HARING, DONALD RUSSELL

REPT. NO. R 147

CONTRACT AF33 616 7700

UNCLASSIFIED REPORT

DESCRIPTORS: \*SWITCHING CIRCUITS, CODING, COMPUTER  
LOGIC, COMPUTER STORAGE DEVICES, COMPUTERS, DATA  
STORAGE SYSTEMS, DIGITAL SYSTEMS, SYNTHESIS

(U)

ONE OF THE MAJOR STEPS IN THE SYNTHESIS OF  
SWITCHING CIRCUITS CONTAINING MEMORY IS THE BINARY  
CODING OF THE INTERNAL STATES. THE CHOICE OF CODE,  
CALLED THE STATE ASSIGNMENT, STRONGLY AFFECTS THE  
COMPLEXITY OF THE CIRCUIT REALIZATION. HENCE, THE  
OBJECTIVE IS TO FIND, FOR A GIVEN SEQUENTIAL MACHINE  
(SM) AS TYPICALLY SPECIFIED BY A FLOW TABLE AND AN  
OUTPUT TABLE, THAT STATE ASSIGNMENT (SA) WHICH  
MINIMIZES THE SEQUENTIAL CIRCUIT (SC) COMPLEXITY.  
THE POINT OF VIEW IS TAKEN THAT THE GREATEST LACK  
IN PROMOTING AN UNDERSTANDING OF THE SA PROBLEM IS  
A KNOWLEDGE OF THE STRUCTURE OF THE RELATIONSHIP  
BETWEEN THE PROPERTIES OF THE SM AND THE PROPERTIES  
OF THE LOGIC REQUIRED BY ITS SC REALIZATION.  
CONSEQUENTLY, A LARGE PART OF THIS REPORT IS  
DEVOTED TO DEVELOPING AND USING SOME NEW TECHNIQUES  
FOR STUDYING THE STRUCTURE OF THIS SM-SC  
RELATIONSHIP. (AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-28# 686

NAVAL AIR DEVELOPMENT CENTER JOHNSVILLE PA AERONAUTICAL  
ELECTRONIC AND ELECTRICAL LAB  
APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER

TECHNOLOGY

(U)

AUG 62 IV HORN, ROBERT W. I

REPT. NO. 6222

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTERS, \*MAGNETIC TAPE, \*METAL  
FILMS, \*THIN FILMS (STORAGE DEVICES), COMPUTER STORAGE  
DEVICES, DATA PROCESSING SYSTEMS, DATA STORAGE  
SYSTEMS, IRON ALLOYS, MAGNETIC MATERIALS, NAVAL  
AIRCRAFT, NICKEL ALLOYS

(U)

IDENTIFIERS: THIN FILMS

(RM)

THE APPLICATION OF THIN MAGNETIC FILMS TO COMPUTER  
TECHNOLOGY IS DISCUSSED. PERMALLOY FILMS, THIN FILMS, AND  
MEMORY SYSTEMS. TECHNICAL INFORMATION FOR NAVAL  
AIRBORNE DATA PROCESSING SYSTEMS.

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-292 172

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB  
THE FX-1 MAGNETIC FILM MEMORY (U)  
IV RAFFEL, J. I. ANDERSON, A. H. I

REPT. NO. TR278TDR62 250

CONTRACT AF19 626 500

MONITOR E50 TDR62 250

UNCLASSIFIED REPORT

DESCRIPTORS: \*MAGNETIC RECORDING SYSTEMS, COMPUTERS,  
DIGITAL SYSTEMS, MAINTENANCE, RELIABILITY, THIN FILMS  
(STORAGE DEVICES) (U)

IDENTIFIERS: THIN FILMS, THIN FILMS  
ELECTRONICS (M)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-292 341

ROME AIR DEVELOPMENT CENTER GRIFFISS AFB N Y  
TAPE ADAPTATION AND CONTROL UNIT  
IV MUOIO,A.W.;

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: +DATA PROCESSING SYSTEMS, +DATA STORAGE  
SYSTEMS, +DIGITAL RECORDING SYSTEMS, +MAGNETIC  
RECORDING SYSTEMS, DIGITAL COMPUTERS, MAGNETIC TAPE,  
PROGRAMMING (COMPUTERS), RESEARCH PROGRAM

ADMINISTRATION

(U)

IDENTIFIERS: PERT

(U)

THE TAPE ADAPTATION AND CONTROL UNIT PROVIDES THE  
NECESSARY LOGIC AND CONTROL CIRCUITRY TO PERMIT A  
COMPUTER TO CONTROL AND TRANSFER DATA TO ANY ONE OF  
EIGHT MAGNETIC TAPE STATIONS. THREE TYPES OF  
MAGNETIC TAPE STATIONS MAY BE USED. COMPUTER  
INPUT-OUTPUT TRANSFER TIME MAY BE MINIMIZED BY THE  
FUTURE MODULAR ADDITION OF A MAGNETIC CORE BUFFER.  
THIS REPORT PRESENTS A DETAILED NARRATIVE OF THE  
ANALYSIS AND DESIGN WORK PERFORMED ON THE FIRST PHASE  
OF THE TACU PROGRAM NAMELY, THE DESIGN PHASE.  
THE INTRODUCTION CONTAINS A DESCRIPTION OF THE  
TACU PROGRAM, A GENERAL BACKGROUND OF THE PROBLEM,  
AND A BREAKDOWN OF THE DESIGN PHASE INTO THE VARIOUS  
SUB-TASKS. THE DISCUSSION CONTAINS THE SYSTEM  
ANALYSIS, SYSTEM AND LOGICAL DESIGN, CIRCUIT DESIGN,  
MECHANICAL DESIGN, POWER SUPPLY DESIGN, RELIABILITY,  
MAINTAINABILITY, AND ERROR DETECTION AND CORRECTION  
OF TACU. A PERT CHART ILLUSTRATES THE MAJOR SUB-  
TASKS AND THEIR INTERRELATIONSHIPS. (AUTHOR) (U)

UNCLASSIFIED

CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-295 405

RADIO CORP OF AMERICA CAMDEN N J INDUSTRIAL ELECTRONIC  
PRODUCTS

PROJECT LIGHTNING

(U)

IV

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA  
PROCESSING SYSTEMS, \*DATA STORAGE SYSTEMS, \*DATA  
TRANSMISSION SYSTEMS, CONFIGURATION, CONTROL SYSTEMS,  
COOLING, DESIGN, PERSONNEL, POWER SUPPLIES,  
RELIABILITY, SWITCHING CIRCUITS, TIME DELAY RELAYS,  
TIMING CIRCUITS

(U)

IDENTIFIERS: LIGHTNING PROJECT

(U)

THE FABRICATION, DESIGN, AND DEVELOPMENT OF LOGIC  
AND MEMORY SUBSYSTEMS FOR USE IN HIGH SPEED DATA  
PROCESSING SYSTEMS.

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AO-299 822

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO

A SHIFT REGISTER-DECODER

JAN 62 IV MARTYNOV, YE. M.?

REPT. NO. TT 62 1436

(U)

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, \*FREQUENCY SHIFT CONVERTERS, CIRCUITS,

COMPUTERS, MAGNETIC CORES, TRANSISTORS

(U)

IDENTIFIERS: USSR

(U)

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UNCLASSIFIED

800396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AC-298 199

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
UTILITY SYSTEM PROGRAMMING PROPOSALS. A TWO TAPE

SYSTEM FOR COPII

(U)

FEA ? JV PRUETT,BILLIE R. I

REPT. NO. TM 890 006 00

CONTRACT AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: \*DATA PROCESSING SYSTEMS, COMPUTERS,  
INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS)

(U)

PROPOSAL FOR A TWO TAPE SYSTEM FOR COPII COMPUTER.

161

UNCLASSIFIED

800396

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-299 007

AMERICAN OPTICAL CO SOUTHBIDGE MASS  
STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA  
PROCESSING

(U)

AUG 62 IV KOESTER,CHARLES J.  
CONTRACT: AF30 602 2440

UNCLASSIFIED REPORT

DESCRIPTORS: +FIBER OPTICS, +LASERS, +PHOSPHORESCENT  
MATERIALS, COMPUTER LOGIC, COMPUTER STORAGE DEVICES,  
COMPUTERS, DATA PROCESSING SYSTEMS, DATA STORAGE  
SYSTEMS, DIODES, ELECTRONIC SWITCHES, FLUORESCENCE,  
INFRARED OPTICAL MATERIALS, MAGNETO-OPTIC EFFECT,  
NEODYMIUM, REFRACTIVE INDEX, RUBY, SILICON

(U)

IDENTIFIERS: NEURISTORS

(U)

STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA PROCESSING.  
LASER SWITCHING EXPERIMENTS, FARADAY AND KEN EFFECT  
EXPERIMENTS, PHOSPHOR AND DETECTOR STUDIES, NEURISTOR  
LASER ANALYSIS.

162

UNCLASSIFIED

800396

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-401 450

SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
INFORMATION FOR COP USERS 088 CARD READ AND 929 CARD  
PUNCH CAPABILITY (U)

MAR 63 IV TABER,W.E.+1

REPT. NO. TM892 004 00  
CONTRACT AF19 628 1648

UNCLASSIFIED REPORT

DESCRIPTORS: \*DATA PROCESSING SYSTEMS, COMPATIBILITY,  
INPUT-OUTPUT DEVICES, PROGRAMMING (COMPUTERS), PUNCHED  
CARDS (U)

CARD READ AND CARD PUNCH CAPABILITY AND COMPATIBILITY.

163

UNCLASSIFIED

B00296

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-401 644

BENDIX CORP TETERBORD N J ECLIPSE-PIONEER DIV

HIGH DENSITY OPTICAL MEMORY DRUM

FEB 63 IV LEE, W. W. I

(U)

CONTRACT: AF33 616 7995

MONITOR: ASD TDR62 791

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*DATA STORAGE SYSTEMS, DENSITY, DESIGN, DIGITAL COMPUTERS, FIBER OPTICS, MANUFACTURING METHODS, MICROMINIATURIZATION (ELECTRONICS), OPTICAL COATINGS, OPTICAL EQUIPMENT COMPONENTS, PHOTOGRAPHIC IMAGES

(U)

HIGH-DENSITY OPTICAL MEMORY DRUM.

164

UNCLASSIFIED

800296

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-402 125

RADIO CORP OF AMERICA CAMDEN N J DEFENSE ELECTRONIC  
PRODUCTS

A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE  
APERTURED PLATE MEMORY

(U)

IV

CONTRACT: AF23 637 7905

MONITOR ASD TOR62 1098

UNCLASSIFIED REPORT

DESCRIPTORS: \*COMPUTER STORAGE DEVICES, \*TELETYPE  
SYSTEMS, COMPUTER LOGIC, DATA PROCESSING SYSTEMS,  
INPUT-OUTPUT DEVICES, SWITCHING CIRCUITS, TIMING  
CIRCUITS

(U)

A TELETYPEWRITER ADAPTER UNIT FOR THE DRISROTE APERTURED  
PLATE MEMORY.

165

UNCLASSIFIED

800296

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-407 5U6

JOINT PUBLICATIONS RESEARCH SERVICE WASHINGTON D C  
SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING. (U)  
FEB 62 76P LUBENNIKAVA, I. L. I.  
KARACHANTSAYA, N. YA. I

UNCLASSIFIED REPORT

NOTICES ALSO FROM OTS FOR \$1.00 AS REPT. 62-  
11124.

SUPPLEMENTARY NOTE: TRANS. OF AKADEMIYA NAVUK BSSR,  
MINSK, VESTSI. SERIYA FIZIKA-TEKHNICHNYKH NAVUK,  
1961, NO. 1, P. 59-74.

DESCRIPTORS: \*DIGITAL COMPUTERS, COMPUTERS,  
\*SEMICONDUCTOR DEVICES, COMPUTER STORAGE DEVICES,  
SWITCHING CIRCUITS, TRIGGER CIRCUITS, PUNCHED TAPE,  
TRIODES, DESIGN, INPUT-OUTPUT DEVICES (U)

SEMICONDUCTOR DEVICES IN COMPUTER ENGINEERING.

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-HU6 060

CBS LABS STAMFORD CONN  
FEASIBILITY STUDY FOR A THIN FILM MEMORY  
SYSTEM.

(U)

DESCRIPTIVE NOTES: FINAL

MAY 63 20P

CONTRACT: NOBSR87214

PROJ: SF007 01 01

TASK: 7121

UNCLASSIFIED REPORT

DESCRIPTORS: \*THIN FILMS (STORAGE DEVICES),  
\*COMPUTER LOGIC, NICKEL ALLOYS, IRON ALLOYS,  
COBALT ALLOYS, SWITCHING CIRCUITS, FEASIBILITY  
STUDIES, TIMING CIRCUITS, DIGITAL COMPUTERS,  
CIRCUITS.

(U)

IDENTIFIERS: TORISTOR, THIN FILMS, THIN FILMS  
ELECTRONICS

(U)

THE OBJECT OF THIS PROJECT IS TO DESIGN AND DEVELOP A FEASIBILITY TEST MODEL OF A SMALL, THIN FILM DIGITAL MEMORY. THE MODEL IS TO BE A 4 WORD, 2 BITS/WORD, NONDESTRUCTIVE, LINEAR SELECT MEMORY. READOUT AND WRITE-IN IS TO BE IN PARALLEL AT A CLOCK FREQUENCY OF 5 MC, AND ADDRESSING WAS TO BE SEQUENTIAL. THE MEMORY ELEMENT TO BE USED IS THE TOROIDAL THIN FILM NI-FE-CO "TORISTOR".

THE TORISTOR IS A THIN FILM NI-FE-CO CYLINDER WHICH HAS BEEN PLATED ON EITHER A GLASS CAPILLARY TUBE OR A STAINLESS STEEL HYPODERMIC TUBE. THOUGH ITS SWITCHING CHARACTERISTICS ARE SIMILAR TO THE PLANAR DOT MEMORY ELEMENT, IT OFFERS THE FOLLOWING ADVANTAGES: (1) A MUCH LARGER OUTPUT SIGNALS (2) NONDESTRUCTIVE READ CHARACTERISTICS (3) RELATIVE FREEDOM FROM THE DESTRUCTIVE EFFECT OF STRONG MAGNETIC FIELDS. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-418 715

SERVO CORP OF AMERICA LINDENHURST N Y

MICROELECTRONIC CIRCUITRY IN MICRO-MODULES.

(U)

DESCRIPTIVE NOTE: FINAL RPPT., 1 JUNE 61-8 OCT 62,

OCT 62 IV WEBER,H. WELD,S. I

PETERTYL,S. IPUTZ, AND R. I

CONTRACT: DA36 029SC87316

TASK: 3A99 15 002 02

UNCLASSIFIED REPORT

DESCRIPTORS: MOLECULAR ELECTRONICS, MANUFACTURING METHODS, MODULES (ELECTRONIC), RELAXATION OSCILLATORS, GATES (CIRCUITS), SWITCHING CIRCUITS, SEMICONDUCTOR DEVICES, VAPOR PLATING, RESISTORS, CAPACITORS, BONDING.

(U)

IDENTIFIERS: GLASS SUBSTRATES, SHIFT REGISTERS, 1962.

(U)

THIS REPORT DESCRIBES THE STEPS UNDERTAKEN IN THE MICROMINIATURIZATION OF SIGNAL CORPS MODULES USED IN A SUBASSEMBLY PREVIOUSLY MANUFACTURED FROM STANDARD COMPONENTS. THIS SUBASSEMBLY IS A SHIFT REGISTER CONSISTING OF 28 FLIP-FLOPS, ONE 4-GATE NETWORKS, AND THREE DRIVER CIRCUITS. FOR EACH TYPE OF CIRCUIT, A TYPICAL LAYOUT EVERY FILM IS SHOWN AT 10X SCALE. FOR THE FIRST CONDUCTOR FILM ON THE FLIP-FLOP CIRCUITS, THE COMPLETE 16 POSITION MASK IS SHOWN IN FULL SCALE. A DESCRIPTION OF THE MATERIAL USED, THE THICKNESS, AND THE FUNCTIONS OF EACH FILM IS GIVEN, TOGETHER WITH THE METHOD OF MONITORING DURING DEPOSITION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-419 553

IBM WATSON RESEARCH CENTER YORKTOWN HEIGHTS N Y  
APPLIED RESEARCH PROGRAM AEROSPACE INTELLIGENCE  
DATA SYSTEM (AIDS), VOLUME II - CONSOLES. (U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4.

SEP 62 28P

CONTRACT: AF19 626 10

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS,  
COMPUTERS), TRANSDUCERS, DISPLAY SYSTEMS,  
PROGRAMMING:COMPUTERS), COMPUTER LOGIC, INPUT-  
OUTPUT DEVICES, HUMAN ENGINEERING, DESIGN (U)  
IDENTIFIERS: 1962. (U)

SOME GENERAL CHARACTERISTICS OF CONSOLES WHEN USED  
AS TRANSDUCERS BETWEEN HUMAN BEINGS AND INFORMATION  
PROCESSING DEVICES ARE REVIEWED. TEST OF A  
SPECIFIC CONSOLE DESIGNED FOR INDEPENDENT "OFF  
LINE" USE, THE DATACOM MODEL 408-2 IS  
DESCRIBED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-420 261

RAND CORP SANTA MONICA CALIF

A GENERAL VIEWPOINT ON SHIFT-REGISTER SEQUENCES, (U)

PCT 63 19P REED, I. S. I

REPT. NO. RM2874PR

CONTRACT: AF49 630 700

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES:

DESCRIPTORS: (\*COMPUTER LOGIC, CIRCUITS) (\*RELAXATION OSCILLATORS, COMPUTER LOGIC), DESIGN, DIGITAL COMPUTERS, COMMUNICATION SYSTEMS, DIGITAL SYSTEMS, SYNTHESIS, SEQUENCES, COMPUTER STORAGE DEVICES, DELAY LINES, DIFFERENCE EQUATIONS (U)

IDENTIFIERS: - 1963, SHIFT REGISTERS, SEQUENCE GENERATORS (U)

THE SHIFT-REGISTER COUNTER IS A DEVICE COMPRISED OF A SMALL NUMBER OF DIGITAL FLIP-FLOPS INTERCONNECTED TO EMIT A LONG, PREDETERMINED, NONREPEATING SERIES OF BINARY BITS. THE THEORY OF THEIR DESIGN IS EXAMINED, CONCENTRATING ON THE SYNTHESIS OF COUNTERS ABLE TO CREATE EXTREMELY LONG SEQUENCES BY SEQUENTIALLY MODIFYING THE EFFECTIVE CONNECTIONS OR OPERATORS IN THE FEEDBACK LOOPS. NON-LINEAR SHIFT-REGISTERS ARE EXAMINED FROM SEVERAL DIFFERENT POINTS OF VIEW, AND THEN THE INSIGHT SO AFFORDED IS APPLIED TO GENERALIZE UPON THE POSSIBLE DIRECTIONS WHICH MIGHT YIELD MAXIMAL LENGTH SEQUENCES WITH A MINIMUM OF EQUIPMENT. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-422 822

ILLINOIS UNIV URBANA ENGINEERING EXPERIMENT STATION  
MULTIPLEXING SPECIAL PURPOSE ACCESSORIES TO A DIGITAL  
COMPUTER. (U)

SEP 69 2IP PURI, Y. K. I

REPT. NO. RRL218 ,TR21

CONTRACT: N0NR1874 02 ,NOBSR89229

PROJ: NR371 161

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, MULTIPLEX),  
(+MULTIPLEX, INPUT-OUTPUT DEVICES), (+INPUT/OUTPUT  
DEVICES, ELECTRICAL NETWORKS), DATA PROCESSING  
SYSTEMS, DATA TRANSMISSION SYSTEMS, COMPUTER LOGIC,  
CIRCUITS, SWITCHING CIRCUITS, GATES (CIRCUITS),  
RELAXATION OSCILLATORS, TRIGGER CIRCUITS, PROGRAMMING  
(COMPUTERS) (U)

IDENTIFIERS: 1963; G-20 COMPUTER (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-421 559

DAVID TAYLOR MODEL BASIN WASHINGTON D C  
A TRANSISTORIZED EXPANDED TRANSLATOR FOR THE UNIVAC  
MOD 407 CARD-TO-TAPE CONVERTER. (U)

DEC 63 82P HANCOCK, H. LEE ,JR. I  
MONITOR: DTMB 1768

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*INPUT-OUTPUT DEVICES, CIRCUITS),  
COMPUTER LOGIC, NETWORKS, DESIGN, PROGRAMMING  
(COMPUTERS), DATA PROCESSING SYSTEMS, PUNCHED CARDS,

MAGNETIC TAPE  
IDENTIFIERS: 1963, CARD-TO-TAPE CONVERTERS, UNIVAC  
MOD 407 TRANSLATOR (U)

THIS REPORT SUMMARIZES THE DESIGN, DEVELOPMENT, AND  
CONSTRUCTION OF A TRANSISTORIZED TRANSLATOR TO  
EXPAND THE MOD 407 REMINGTON RAND CARD-TO-  
TAPE CONVERTER (48-CHARACTER FORMAT) TO A  
FULL 63-CHARACTER FORMAT CONVERTER. THE LOGICAL  
DESIGN, CIRCUIT DESIGN, AND CONSTRUCTION AS WELL AS  
THE ADDITIONAL CIRCUITRY REQUIRED FOR THE COMPARISON  
MODULE ARE DESCRIBED AND DISCUSSED. NOW IN FULL  
OPERATION, THIS EXPANDED TRANSLATOR IS GIVING  
RELIABLE, MAINTENANCE-FREE SERVICE IN THE APPLIED  
MATHEMATICS LABORATORY OF THE DAVID TAYLOR  
MODEL BASIN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-425 108  
MITRE CORP BEDFORD MASS  
AN INPUT/OUTPUT TYPEWRITER FOR COMMUNICATING WITH A  
DIGITAL COMPUTER, (U)  
MAR 64 44P MITCHELL,J. S  
REPT. NO. TM3820  
CONTRACT: AF19 628 2390  
PROJ: 508  
MONITOR: ESD TDR64 01

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DIGITAL COMPUTERS, TYPEWRITERS),  
(+TYPEWRITERS, DIGITAL COMPUTERS), INPUT-OUTPUT  
DEVICES, DESIGN, DATA STORAGE SYSTEMS, INSTRUCTION  
MANUAL, CIRCUITS (U)

IDENTIFIERS: 1964, CODES, SYMBOLS (U)

AN INPUT/OUTPUT TYPEWRITER PROVIDES THE TYPIST WITH  
MEANS OF ENTERING DATA INTO A COMPUTER PROGRAM  
THROUGH THE KEYBOARD AND A MEANS OF OBTAINING DATA  
FROM THE COMPUTER THROUGH THE PRINTER. AN INPUT/  
OUTPUT TYPEWRITER, WHICH IS A MODIFICATION OF A  
STANDARD ELECTRIC TYPEWRITER, HAS BEEN DESIGNED  
FOR USE WITH THE PHOENIX COMPUTER THROUGH THE LOW-  
SPEED BUFFER OR WITH THE MITRE 7020 COMPUTER  
THROUGH THE SYSTEM DESIGN LABORATORY (SDL)  
DISPLAY CONSOLES. THE OPERATION OF THIS TYPEWRITER  
IS DESCRIBED, AND THE FUNCTIONS OF THE MAJOR  
COMPONENTS EXPLAINED. THE APPENDICES GIVE DETAILS  
OF THE CODING AND OF THE SYSTEM DESIGN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-425 465

HOUSTON FEARLESS CORP LOS ANGELES CALIF  
AUTOMATIC UNIT-RECORD STORAGE AND RETRIEVAL DEVICE  
BS-6A.

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. (U)  
APR 64 45P SPENGLER,S. MAISNER,L. I  
REPT. NO. R112 64  
CONTRACT: AF30 602 2993  
PROJ: 4594  
TASK: 459402  
MONITOR: RADC TOR62 802

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (INFORMATION RETRIEVAL, COMPUTERS),  
DATA PROCESSING SYSTEMS, DATA STORAGE SYSTEMS,  
COMPUTER LOGIC, DESIGN, TEST SETS

IDENTIFIERS: 1964, SCRM PROJECT, BS-6A (U)

PROJECT SCRAM'S PRIME PROGRAM OBJECTIVE IS TO  
ESTABLISH ECONOMICAL METHODS OF STORING 10,000 UNIT  
RECORDS AND RETRIEVING THEM AT A MINIMUM RATE OF 190  
PER SECOND PER MODULE. HYDRAULIC AND PNEUMATIC  
METHODS OF UNIT-RECORD TRANSPORT PROVED OPERATIONALLY  
UNRELIABLE AND DIFFICULT TO IMPLEMENT DURING  
SUBSEQUENT BREADBOARDING, SO THEY WERE ABANDONED.  
MORE RELIABLE AND ECONOMICAL ELECTROMECHANICAL  
HARDWARE WAS DEVELOPED. LOGIC SUBSYSTEM DESIGN,  
SPECIAL MEMORY-CONTROL CIRCUIT DESIGN, DESIGN OF  
COMMERCIAL LOGIC CARDS, AND THE DRUM MEMORY DESIGN  
ARE DISCUSSED IN THIS REPORT. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-464 766

ROYAL AIRCRAFT ESTABLISHMENT FARNBOROUGH (ENGLAND)  
DIGITAL MAGNETIC TAPE UNITS FOR THE MERCURY AND DEUCE  
COMPUTERS. PART 2, CONTROL CIRCUITS. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,

NOV 64 IV SANDERSON,K. ITHANE,P. D. M.

REPT. NO. TR-64054

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+MAGNETIC TAPE, DIGITAL  
COMPUTERS), (+DIGITAL COMPUTERS, MAGNETIC  
TAPE), INPUT-OUTPUT DEVICES, GREAT BRITAIN,  
POWER SUPPLIES, COMPUTER LOGIC, CIRCUITS (U)

THIS REPORT DESCRIBES THE FUNCTION AND FORMAT  
SELECTION CIRCUITS, THE CIRCUITS CONTROLLING TAPE  
DRIVE AND TAPE SPOOLING, AND THE POWER SUPPLIES FOR  
THE MERCURY AND DEUCE COMPUTERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-600 271

TEXAS INSTRUMENTS INC DALLAS  
DEVELOPMENT OF AN INTERMEDIATE CAPACITY, HIGHSPEED  
MAGNETIC FILM MEMORY SYSTEM. (U)

DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT., 19 JULY  
62-19 MAY 63.

AUG 63 56P TOOMBS,H. D. IDELHOM,L. A. I  
CONTRACT: AF33 657 9228

PROJ: 4335

TASK: 433517

MONITOR: RTD TOR63 4216

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTORS: (\*DATA STORAGE SYSTEMS, MAGNETIC  
RECORDING SYSTEMS), (\*MAGNETIC RECORDING SYSTEMS, DATA  
STORAGE SYSTEMS), (\*DATA STORAGE SYSTEMS, CIRCUITS),  
MAGNETIC FIELDS; COMPUTERS, ALUMINUM, TRANSFORMERS,  
TRANSISTORS (U)

IDENTIFIERS: MAGNETIC FILMS (U)

THE REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF  
A MAGNETIC FILM MEMORY SYSTEM WITH A STORAGE CAPACITY  
OF 4096 BITS ARRANGED AS 512 WORDS OF 8 BITS EACH.  
THE WORD-ORGANIZED SYSTEM HAS A READ-WRITE CYCLE  
TIME OF 142 NANoseconds. THE STORAGE MEDIUM  
CONSISTS OF CONTINUOUS SHEETS OF MAGNETIC FILM  
DEPOSITED ON POLISHED ALUMINUM SUBSTRATES. THE  
LOCATION AND SIZE OF THE STORAGE BITS ARE DEFINED BY  
THE INTERSECTION OF THE WORD AND DIGIT-SENSE  
CONDUCTORS. A TRANSISTOR-CURRENT TRANSFORMER  
MATRIX IS USED TO PERFORM WORD SELECTION AND TO  
PROVIDE AN 800-MILLIAMPERE, 85-NANOSECOND BASE WIDTH  
WORD DRIVE PULSE. A BIPOLAR DIGIT PULSE OF ~200-  
MILLIAMPERE, 40-NANOSECOND BASE WIDTH IS USED.  
CURRENT SWITCHING IS USED IN THE LOW-LEVEL LOGIC  
CIRCUITS. PERTINENT MEMORY WAVEFORMS ALONG WITH  
OPERATING RESULTS ARE GIVEN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-600 938

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

DATA SYSTEMS.

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., DIVISION 2. (U)

1 FEB70 APR 64,

MAY 64 21P FRICK,F. C. ID0000,S. H. I

CONTRACT: AF19 626 500

MONITOR: ESD TDR64 97

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, DIGITAL COMPUTERS), (+DIGITAL COMPUTERS, DESIGN), (+SYSTEMS ENGINEERING, DATA PROCESSING SYSTEMS), COMPUTER LOGIC, COMPUTER STORAGE DEVICES, ELECTRONIC EQUIPMENT, COMPILERS, PROGRAMMING (COMPUTERS), BIONICS, INFORMATION RETRIEVAL, BALLISTICS (U)

CONTENTS: DIGITAL COMPUTERS--COMPUTER SYSTEMS; CIRCUIT DEVELOPMENT; MAGNETIC FILM ENGINEERING; ELECTRON TRANSPORT; MAGNETIC FILMS; ADVANCED CIRCUITS; AUTOMATIC PROCEDURE EXECUTOR; CONTROL RESEARCH--DATA FILE, STORAGE, RETRIEVAL AND EDITING. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-601 458

NATIONAL SCIENTIFIC LABS INC MCLEAN VA  
ALL-ELECTRONIC DATA INPUT-OUTPUT STUDY,  
DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT., NO. 2, 1 (U)

JAN-21 MAR 64.

MAR 64 45P LEPPER,WENDELL E. I

CONTRACT DA36 039AMC03246E

PROJ: 9826 04 001

TASK: 1GG 40603D494 03

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, INPUT-OUTPUT DEVICES), (+INPUT-OUTPUT DEVICES, DATA PROCESSING SYSTEMS), (+PRINTING, REVIEWS), PIEZOELECTRIC TRANSDUCERS, PUNCHED CARDS, MAGNETOSTRICTIVE ELEMENTS, PHOTOGRAPHIC PRINTERS, LASERS, FEASIBILITY

STUDIES IDENTIFIERS: JET PRINTING, CARD READER (U) (U)

JET PRINTING STUDIES DURING THIS QUARTER INDICATED THAT, ALTHOUGH THE TRANSDUCERS STUDIED MAY NOT BE FEASIBLE FOR PIERCING MULTIPLE SHEETS OF PAPER, THEY MAY BE USEFUL FOR PRINTING ONE OR MORE COPIES BY IMPACT OF THE JET ON CARBON PAPER. THE SPARK DISCHARGE METHOD OF JET ENERGIZING IS CONSIDERED IMPRACTICAL BECAUSE OF THE HIGH VOLTAGE LEVELS REQUIRED AND BECAUSE OF PROBLEMS ARISING FROM HIGH OPERATING TEMPERATURES. BARIUM TITANATE WAS ADJUDGED THE BEST PRACTICAL PIEZOELECTRIC MATERIAL. SIMILARLY, PURE NICKEL IS THE BEST READILY AVAILABLE MAGNETOSTRICTIVE MATERIAL. POSSIBLE JET PRODUCTION VIA A PRESSURIZED VESSEL WITH ELECTROMECHANICAL VALVES WAS CONSIDERED IMPRACTICAL AND WAS NOT PURSUED. GAS TUBES AND NEON LAMPS ARE POTENTIALLY USEFUL AS ELECTRONIC DISPLAY SOURCES FOR PHOTOGRAPHIC OR ELECTROSTATIC PRINTING. THEY CAN OPERATE AT HIGH SPEEDS AND THEY ARE RELATIVELY INEXPENSIVE. USE WITH FIBER OPTICS WOULD OFFER FLEXIBILITY OF CONSTRUCTION METHODS. OTHER LIGHT SOURCES, E.G., LASERS, ELECTROLUMINESCENCE, AND CATHODE-RAY TUBES, MAY BE USED IN ELECTROSTATIC PRINTING. METHODS OF MODULATING THE DIRECTION OF A LASER BEAM ELECTRICALLY MAY BE USEFUL FOR FUTURE PRINTING DEVICES, IF COST BECOMES REASONABLE. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-ACI 618

NAVAL ORDNANCE LAB WHITE OAK MD  
DELAY LINE TIME COMPRESSOR WOX-PA+  
APR 64 50P MUNSON, JOHN C. I  
PARTON, LESTER E. I  
TASK: RUDCQB000 902  
MONITOR: NOL TRAI 47

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DELAY LINES, DATA PROCESSING SYSTEMS),  
(+DATA PROCESSING SYSTEMS, DIGITAL SYSTEMS), HIGH  
FREQUENCY, DATA STORAGE SYSTEMS, TRANSISTORS, SONAR  
EQUIPMENT, ACOUSTICS, CIRCUITS, DESIGN, GRAPHICS,  
SIGNALS, PROCESSING, OPERATION, CORRELATORS, CLIPPER  
CIRCUITS, ELECTRONICS  
(U)

IDENTIFIERS: DELTIC WOX-PA, WOX-PA COMPRESSOR (U)

THIS REPORT DESCRIBES IN SOME DETAIL THE FULLY  
TRANSISTORIZED WOX-PA DELAY LINE TIME  
COMPRESSOR (DELTIC). THE BIT RATE IS 10  
MEGACYCLES. THIS EQUIPMENT HAS PROVEN TO BE VERY  
RELIABLE IN DAILY OPERATION. THE TRANSISTORIZATION  
HAS GREATLY REDUCED THE POWER REQUIRED RELATIVE TO A  
COMPARABLE VACUUM TUBE MODEL. SINCE THE PRINCIPLES  
OF DELTIC OPERATION HAVE BEEN PRESENTED FULLY IN  
EARLIER REPORTS (PB-165 034) ONLY A SHORT  
DESCRIPTION OF BASIC PRINCIPLES IS GIVEN. INSTEAD,  
THE DETAILS OF CIRCUIT OPERATION ARE BRIEFLY TREATED.  
BLOCK DIAGRAMS, SCHEMATICS, AND PHOTOGRAPHS SHOWING  
COMPONENT LAYOUTS ARE INCLUDED. PHOTOGRAPHS ARE  
SHOWN OF TYPICAL WAVEFORMS AT VARIOUS POINTS WITHIN  
THE SYSTEM, AND THESE ARE KEYED TO THE BLOCK DIAGRAMS  
AND SCHEMATICS. ALL DIAGRAMS ARE GROUPED AT THE  
END OF THE REPORT TO FACILITATE USE IN  
TROUBLESHOOTING. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-602 067

IBM DATA SYSTEMS DIV KINGSTON N Y  
CRYOGENIC ASSOCIATIVE PROCESSOR PLANE TEST AND  
EVALUATION.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 15 AUG-19  
DEC 62,

JUN 64 30P ROSENBERGER, G. B. I  
CONTRACT: AF30 602 3175  
PROJ: 5581  
TASK: 558108  
MONITOR: RADC TD 64 26

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*CRYOGENIC STORAGE DEVICES, RESEARCH  
PROGRAM ADMINISTRATION), MANUFACTURING METHODS,  
PERFORMANCE (ENGINEERING), DATA PROCESSING SYSTEMS,  
SUPERCONDUCTIVITY, CIRCUITS, FILMS, POLYMERS, VAPOR  
PLATING, VACUUM APPARATUS, CAPACITORS, LEAD, TIN,  
METAL FILMS, SILICON COMPOUNDS, MONOXIDES, ELECTRIC  
INSULATION, ELECTRON BOMBARDMENT

(U)

IDEN :IFIERS: CRYOTRONS

(U)

THE FABRICATION AND TESTING OF A CRYOGENIC  
ASSOCIATIVE PROCESSOR ARE DESCRIBED IN THIS  
REPORT. THE PROCESSOR CONSISTED OF 2350 CRYOTRONS  
INTERCONNECTED TO FORM TEN 12-BIT WORDS OF  
ASSOCIATED STORAGE. THE CRYOTRONS AND THE  
NECESSARY CONTROL CIRCUITRY WERE VACUUM-DEPOSITED ON  
A FOUR AND A HALF BY FOUR AND A HALF INCH SUBSTRATE.  
POLYMER TYPE INSULATION WAS USED. THE  
FABRICATION PROCESS AND THE REASONS FOR LIMITED  
SUCCESS OF THE PROGRAM ARE DISCUSSED IN DETAIL.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-605 263  
BAY STATE ELECTRONICS CORP WALTHAM MASS  
BS-501 HIGH-SPEED CORRELATOR. (U)  
DESCRIPTIVE NOTE: FINAL REPT.  
AUG 64 86P  
CONTRACT: TO 602 2915  
PROJ: 552  
TASK: 552401  
MONITOR: RADC , TDR64 158

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*CORRELATORS, DESIGN), (\*SPECIAL PURPOSE COMPUTERS, CORRELATORS), OPERATION, REAL TIME, CORRELATION TECHNIQUES, CIRCUITS, DIGITAL COMPUTERS.

ACOUSTICS (U)  
IDENTIFIERS: BS-501 CORRELATOR (U)

THIS REPORT DESCRIBES THE DESIGN AND DEVELOPMENT OF AN EXPERIMENTAL REAL TIME AUDIO BANDWIDTH (80 TO 5000 CPS) CORRELATOR THAT WILL DISPLAY A CORRELOGRAM WHILE OPERATING 'ON LINE.' THE CORRELATION INDEX IS DISPLAYED AS A FUNCTION OF RELATIVE DELAY AND TIME FOR EITHER AUTO OR CROSS CORRELATION. THE CORRELOGRAM IS PRESENTED AS A THREE-DIMENSIONAL DISPLAY ON THE CRT OF A SELF-CONTAINED OSCILLOSCOPE WITH THE X AXIS PRESENTING TIME, Y AXIS RELATIVE DELAY AND Z (INTENSITY) REPRESENTING THE CORRELATION INDEX. SIGNAL INPUT CIRCUITRY INCLUDES A NORMALIZ. (AGC) FUNCTION WITH 40 DB DYNAMIC RANGE ALONG THE NECESSARY GROSS INPUT LEVEL CONTROLS AND METERING. A FIVE-BIT A TO D CONVERTER DRIVES A RECIRCULATING MEMORY SPEED UP SYSTEM. APPROPRIATE CLOCK, ACCUMULATOR, AND COMPUTE CIRCUITS ARE USED TO APPROXIMATE CORRELATION COEFFICIENT AT A REAL TIME RATE. THE OUTPUT D TO A CONVERTER DRIVES THE Z AXIS OF THE OSCILLOSCOPE TO INDICATE THE CORRELATION COEFFICIENT. THE OPERATING FEATURES OF THIS DEVICE ARE GIVEN.

(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-606 290

MASSACHUSETTS INST OF TECH CAMBRIDGE INSTRUMENTATION  
LAB

TRANSISTORIZED SHIFT REGISTER.

(U)

DESCRIPTIVE NOTE: BACHELOR OF SCIENCE THESIS,

JUN 57 74P SCHOENDORF, WILLIAM H. ;

REPT. NO. T-126

CONTRACT: AF04 645 9

PROJ: 52 126

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART  
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AVAILABLE COPY.

DESCRIPTORS: (TRANSISTORS, MAGNETIC CORES),  
(MAGNETIC CORE STORAGE, TRANSISTORS), DELAY CIRCUITS,  
DIODES, PENTODES, RADIOFREQUENCY PULSES, SWITCHING  
CIRCUITS, VOLTAGE, ELECTRIC CURRENTS, WIRING DIAGRAMS,  
EXPERIMENTAL DATA

(U)

IDENTIFIERS: SHIFT REGISTERS

(U)

THE OBJECTIVE WAS TO STUDY A TRANSISTORIZED  
MAGNETIC CORE SHIFT REGISTER AND TO EVALUATE A  
SUITABLE POWER TRANSISTOR AS A POSSIBLE DRIVING  
SOURCE FOR THE REGISTER. INVESTIGATION OF THE  
REGISTER WAS ORIGINALLY CARRIED OUT USING A PENTODE  
DRIVER IN ORDER TO OFFER A MEANS FOR COMPARISON WITH  
THE TRANSISTOR SHIFTING SOURCE. THE WESTERN  
ELECTRIC GA-52630 PNP JUNCTION TRANSISTOR WAS  
FOUND TO MEET THE REGISTER REQUIREMENTS QUITE  
SATISFACTORILY. OPERATING REGIONS OF THE SHIFT  
REGISTER WERE OBTAINED USING THIS TRANSISTOR IN THE  
GROUNDED Emitter AND GROUNDED BASE CONFIGURATIONS,  
AND THE LATTER WAS FOUND TO BE MORE SUCCESSFUL. IT  
WAS POSSIBLE TO DRIVE THIRTY CORES QUITE RELIABLY  
USING THE GROUNDED BASE CONFIGURATION, AND THE  
OPERATING REGIONS OBTAINED COMPARED FAVORABLY WITH  
THOSE OF THE VACUUM TUBE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-606 604

RAND CORP SANTA MONICA CALIF  
CONTRASTS IN LARGE FILE MEMORIES FOR LARGE SCALE  
COMPUTERS,

MAR 58 SP POSTLEY, JOHN A. I  
REPT. NO. P-1230

(U)

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SUPPLEMENTARY NOTE: LEGIBILITY OF THIS DOCUMENT IS IN PART  
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AVAILABLE COPY.

DESCRIPTORS: (\*COMPUTER STORAGE DEVICES, DIGITAL  
COMPUTERS), PERFORMANCE (ENGINEERING), CONTROL  
SYSTEMS, ANALYSIS, MAGNETIC TAPES

(U)

THE INCREASING REQUIREMENT FOR VERY LARGE FILES IN  
DIGITAL COMPUTER SYSTEMS HAS LEAD TO THE  
IDENTIFICATION OF SEVERAL IMPORTANT CHARACTERISTICS  
OF THESE FILES, AND TO THE DEVELOPMENT OF FILES WHICH  
EXHIBIT THESE CHARACTERISTICS IN VARYING DEGREES.  
AS A RESULT, A NEW SITUATION HAS BEEN CREATED  
WHEREIN A DETAILED STUDY OF THESE CHARACTERISTICS  
WILL NOW BE NECESSARY IN SOME APPLICATIONS TO  
DETERMINE THE PARTICULAR FILE MOST SUITABLE FOR THE  
PROBLEM OR PROBLEMS TO BE DEALT WITH.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-607 220

MIDWEST RESEARCH INST KANSAS CITY MO  
INVESTIGATION OF ELECTRO- AND MAGNETOOPTIC TECHNIQUES  
FOR INFORMATION STORAGE AND RETRIEVAL. (U)  
DESCRIPTIVE NOTE: TECHNICAL DOCUMENTARY REPT. FOR 1 MAY  
64-71 JUL 64.

SEP 64 72P CONNELL,R. A. I  
CONTRACT: AF32 657 11560  
PROJ: 7062 ,2699P  
TASK: 706201  
MONITOR: AL , TDR64 228

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, MATERIALS);  
(+THIN FILMS (STORAGE DEVICES), PRODUCTION);  
(+MANGANESE COMPOUNDS, BISMUTH COMPOUNDS). DATA  
STORAGE SYSTEMS, INFORMATION RETRIEVAL, INTERMETALLIC  
COMPOUNDS, FERROMAGNETIC MATERIALS, MAGNETO-OPTIC  
EFFECT, OPTICAL PROPERTIES, CRYSTALS, EVAPORATION,  
POWDERS, CRYSTAL STRUCTURE (U)

A PROGRAM OF RESEARCH ON MATERIALS FOR HIGH DENSITY  
INFORMATION STORAGE AND RETRIEVAL WAS CONDUCTED, WITH  
EMPHASIS ON THE FABRICATION OF THIN FILMS OF  
MNB1. THIS INTERMETALLIC COMPOUND IS  
FERROMAGNETIC, WITH ITS AXIS OF EASY MAGNETIZATION  
ALONG ITS HEXAGONAL C-AXIS. POLYCRYSTALLINE FILMS  
OF THIS MATERIAL GENERALLY SHOW A STRONGLY PREFERRED  
ORIENTATION, WITH THE C-AXIS NORMAL TO THE PLANE OF  
THE FILM. SUCH A CONFIGURATION IS IDEAL FOR THE  
EMPLOYMENT OF MAGNETO-OPTICAL READ-OUT SYSTEMS.  
MAJOR PROBLEMS EXIST IN THE CONTROL OF NUCLEATION  
AND GROWTH OF SUITABLY ORIENTED MNB1, AND IT WAS  
HERE THAT MAXIMUM EFFORT WAS MADE. SEVERAL  
FABRICATION TECHNIQUES WERE TRIED, INCLUDING PHYSICAL  
SPUTTERING, GRAIN-BY-GRAIN FLASH EVAPORATION OF BOTH  
MIXED POWDERS AND PREFORMED ALLOY POWDER, AND  
SEQUENTIAL EVAPORATION SCHEMES. THE LATTER METHOD  
GAVE THE BEST RESULTS IN SPITE OF PROBLEMS IN  
INTERLAYER DIFFUSION AND COMPOUND FORMATION.

(AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-607 906

THOMPSON RAMO WOOLDRIDGE INC LOS ANGELES CALIF  
THE RAMO-WOOLDRIDGE CORPORATION GENERAL RESEARCH  
PROGRAM, 1957, SECTION E. MAGNETIC DIGITAL  
TECHNIQUES.

(U)

DESCRIPTIVE NOTE: PROGRESS REPT.,

JAN 58 7P SCARBROUG, A. D. INYBERG, J. J.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+MAGNETIC CORES, DIGITAL SYSTEMS),  
(+THIN FILMS (STORAGE DEVICES), MAGNETIC CORE  
STORAGE), CIRCUITS, ELECTROMAGNETIC PROPERTIES,

(U)

PLATING, DIGITAL COMPUTERS

(M)

IDENTIFIERS: THIN FILMS, THIN FILMS  
ELECTRONICS

1. PROGRESS REPORT IS PRESENTED ON THE  
INVESTIGATIONS OF DIGITAL CIRCUITS USING FERRITE  
MEMORY CORES AND THIN FILMS.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-608 U77

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
TAPE-DRIVE ASSEMBLY FOR MAGNETIC TAPES IN THE M-2  
COMPUTER,

OCT 64 20P KNYAZEV,V. D. ISAKHAROV,V. N. S  
MONITOR: FTD ATT MT64 2213 ,64 71686 (U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF TSIFROVAYA  
TEKHNIKA I VYCHISLITEL'NYE USTROISTVA (USSR) 1962,  
NO. 2, P.88-97.

DESCRIPTORS: (+MAGNETIC TAPE, ELECTROMAGNETIC  
DRIVES), (+DRIVES, MAGNETIC TAPE), COMPUTERS, COMPUTER  
STORAGE DEVICES, MAGNETIC RECORDING SYSTEMS, CONTROL  
SYSTEMS, COMPUTER LOGIC, WIRING DIAGRAMS, MECHANICAL  
DRAWINGS, USSR (U)

THE TAPE-DRIVE ASSEMBLY IS DESIGNED FOR SLIDING THE  
MAGNETIC TAPE UNDER READ-RECORD HEADS IN ACCORDANCE  
WITH INSTRUCTIONS, ARRIVING FROM CONTROL BLOCK OF  
MEMORY UNIT. IN THE TAPE-DRIVE ASSEMBLY THERE IS  
REALIZED ALSO DIRECT RECORDING OF INFORMATION ON TAPE  
AND READING OF INFORMATION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-609 005

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB  
DIVISION 2. DATA SYSTEMS.

(U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 AUG-71  
OCT 64.

NOV 64 25P

CONTRACT: AF19 628 500

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, COMPUTERS),  
(\*COMPUTERS, DATA PROCESSING SYSTEMS), CIRCUITS,  
SWITCHING CIRCUITS; TRANSISTORS, COMPUTER STORAGE  
DEVICES, ELECTRONICS, ANALOG-DIGITAL COMPUTERS,  
DESIGN, CONTROL, INFORMATION RETRIEVAL, MAGNETIC TAPE,  
ALUMINUM, OXIDES, DIODES, TRIODES

(U)

IDENTIFIERS: APOLLO, PRESS PROJECT, \*CLEAN  
ROOMS

(U)

CONTENTS: DIGITAL COMPUTERS; COMPUTER  
SYSTEMS-CURVE-DRAWING SCOPE, OPTICAL INPUT,  
MULTIUSER CONSOLES, SYMBOLIC PAGE-ADDRESS  
TRANSFORMATION; CIRCUIT DEVELOPMENT--INTEGRATED  
CIRCUITS, UHI SWITCHING TRANSISTORS, TRANSISTOR  
FLIP-FLOP MEMORY; MAGNETIC FILM ENGINEERING-  
CLEAN ROOM, PATTERN SCRIBING, MAGNETIC FILM  
CHARACTERISTICS; CONTENT--ADDRESSED MEMORY, LARGE-  
CAPACITY MEMORY TESTER, CIRCUIT DESIGN, PAGE-ADDRESS  
MEMORY; SYSTEM PROGRAMMING APPLICATIONS--CLASS-  
ORIENTED RING ASSOCIATIVE LANGUAGE, VARIABLY  
INITIALIZED TRANSLATOR FOR ALGORITHMIC LANGUAGES;  
COMPUTER COMPONENTS: MAGNETIC FILMS--  
ANISOTROPY, MAGNETO-OPTICS, TERNARY ALLOYS;  
ELECTRON TRANSPORT-AL-AL203 DIODES AND  
TRIODES, CONTACT POTENTIAL DURING AL203 GROWTH,  
FILM-MEMORY SENSE AMPLIFIERS; PSYCHOLOGY;  
AUTOMATIC PROCEDURE EXECUTOR; HUMAN  
INFORMATION PROCESSES--RECOGNITIVE BEHAVIOR,  
UNIDIMENSIONAL SIMILARITY, SIGNAL DETECTION,  
PERCEPTIBILITY AND MEMORABILITY; AND CONTROL  
RESEARCH; ON-LINE DATA STORAGE,  
RETRIEVAL, AND EDITING; HYBRID COMPUTER  
DEVELOPMENT; ESTIMATION AND CONTROL THEORY.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800796

AD-609 469

RCA LABS PRINCETON N J  
CRYOELECTRIC RANDOM ACCESS MEMORY; PHASE II 10(?) BIT  
MEMORY. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR 1 MAR 63-1 MAR 64.

NOV 64 262P BURNS,L. L. BOOSWICK,D. S

CHRISTIANSEN,D. A. COSENTINO,V. H. FEJER,J. S

CONTRACT: AFDO 602 3090

PROJ: 5581

TASK: 558108

MONITOR: RADC TDR64 375

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-422 990.

DESCRIPTORS: (\*CRYOGENIC STORAGE DEVICES,  
MANUFACTURING METHODS), (\*COMPUTER STORAGE DEVICES,  
DIGITAL COMPUTERS), CRYOGENICS, ELECTRICAL NETWORKS,  
THERMODYNAMICS, THEORY, COMPUTER LOGIC, THIN FILMS  
(STORAGE DEVICES), SUPERCONDUCTORS. (U)

IDENTIFIERS: RANDOM ACCESS MEMORY: CRYOTRONS,  
CRYOTRONS (U)

THIS REPORT COVERS THE WORK PERFORMED UNDER PHASE  
II OF A CONTEMPLATED THREE-PHASE PROGRAM TO DEVELOP  
THE THEORY AND TECHNOLOGY NECESSARY FOR THE  
MANUFACTURE OF BILLION-BIT CRYOELECTRIC MEMORIES.  
FURTHER ADVANCES IN THE THEORETICAL UNDERSTANDING  
OF MEMORY OPERATION HAVE CLEARLY DELINEATED THE  
REQUIREMENTS OF THE FABRICATION EFFORT. TESTS OF  
THE MANY SAMPLES MADE DURING THE YEAR HAVE  
ESTABLISHED THAT THE MATCHING OF MEMORY PLANES WITH  
THE NECESSARY CRYOTRON TREES IS PRACTICAL. PHASE  
II CLOSED WITH THE SUCCESSFUL TESTING OF A 128 BY  
128 MEMORY PLANE CONTAINING 16,384 CELLS AND 908  
CRYOTRONS IN THE TREES. ONLY A PROBLEM WITH  
UNEPECTEDLY LOW SENSE SIGNALS FROM THE CENTER  
PORTION OF THE PLANE PREVENTED THE STACKING OF A  
GROUP OF THESE PLANES. IMPROVED HIGH-SPEED  
EVAPORATION PLANTS HAVE GREATLY INCREASED THE YIELD  
OF EXPERIMENTAL SAMPLES AND IMPROVED THEIR QUALITY.  
CONTINUED ADVANCES IN MASK FABRICATION TECHNIQUES  
HAVE PROVIDED METHODS THAT ARE SUITABLE FOR THE FINER  
PATTERNS REQUIRED FOR 512 BY 512 AND 1024 BY 1024  
PLANES. RELATED WORK ON HIGH-SPEED SELECTION TREES  
EMPLOYING CRYOTRONS IS REPORTED. IT IS SHOWN THAT  
CRYOTRONS ARE SUITABLE FOR THIS APPLICATION BUT  
FURTHER WORK IS NECESSARY TO REDUCE THE HEAT  
DISSIPATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-610 211

DAVID TAYLOR MODEL BASIN WASHINGTON D C  
A TECHNIQUE FOR UTILIZING THE IBM OR THE RCA RANDOM-  
ACCESS MASS-MEMORY DEVICES TO STORE THE DATA BASE OF  
A COMMAND AND CONTROL INFORMATION PROCESSING  
SYSTEM.

(U)

NOV 64 12P FRIEDENBERG,PAUL E. I  
WALTON,THOMAS S. I  
REPT. NO. DTMB-1917  
PROJ: SS192 001  
TASK: 7160

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMMAND AND CONTROL SYSTEMS, COMPUTER  
STORAGE DEVICES), (+DATA PROCESSING SYSTEMS, COMPUTER  
STORAGE DEVICES), DIGITAL COMPUTERS, MAGNETIC CORE  
STORAGE, DATA STORAGE SYSTEMS

(U)

IDENTIFIERS: RANDOM-ACCESS MEMORY, UNIVAC CP-667

(U)

TWO DIFFERENT MASS MEMORIES ARE STUDIED FOR THEIR  
SUITABILITY TO STORE THE DATA BASE IN A COMMAND AND  
CONTROL INFORMATION-PROCESSING SYSTEM. THE IBM  
UNIT EMPLOYS METAL DISK PACKS WHEREAS THE RCA UNIT  
USES MAGAZINES OF PLASTIC CARDS FOR THE RECORDING  
MEDIUM. HOWEVER, ANALOGIES IN THEIR LOGICAL  
CAPABILITIES MAKE IT POSSIBLE TO USE IDENTICAL  
METHODS OF FILE ORGANIZATION. IT IS SHOWN THAT THE  
EQUIPMENT CAN BE EFFECTIVELY UTILIZED TO PROCESS  
FORMATED FILES ON A RANDOM-ACCESS BASIS. COMPACT  
INDEXES ARE GENERATED SO THAT IT-MS CAN BE QUICKLY  
LOCATED EITHER BY NAME OR BY CO. - T. THE TIMES  
REQUIRED FOR UPDATING AND SEARCHING SUCH FILES ARE  
ANALYZED, AND THE ADVANTAGES TO BE GAINED OVER  
CONVENTIONAL TECHNIQUES ARE INDICATED. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-611 142

GENERAL ELECTRIC CO BRIDGEPORT CONN  
REINFORCED PLASTIC MAGNETIC TAPE.

(U)

DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 4, 1 DEC 62-31

MAR 63,

MAR 63 29P KIRK,N. MCBOURNIE,D. S

LASSILA,A. I

CONTRACT: DA36 039SC88951

PROJ: 3A99 15 002

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-287 219.

DESCRIPTORS: (MAGNETIC TAPE, DATA STORAGE SYSTEMS),  
(MAGNETIC RECORDING SYSTEMS, MAGNETIC TAPE),  
(REINFORCING MATERIALS, MAGNETIC TAPE), ELASTOMERS,  
PLASTICS, SILICONE PLASTICS, GLASS, GLASS TEXTILES,  
CARBONATES, BINDERS, DATA PROCESSING SYSTEMS, TENSILE  
PROPERTIES, COATINGS, NITRILES, OXIDES, ANALYSIS,  
MANUFACTURING METHODS, RELIABILITY (ELECTRONICS),  
TESTS

(U)

MAGNETIC TAPE BASE MATERIALS POSSESS INADEQUACIES  
IN CERTAIN CRITICAL DATA STORAGE APPLICATIONS. THE  
OBJECTIVE OF THE PROJECT IS TO DEVELOP BACKING  
MATERIALS WHICH WILL IMPROVE THE EFFICIENCY AND  
RELIABILITY OF AUTOMATIC DATA PROCESSING EQUIPMENT  
AND ASTROELECTRONIC RECORDING DEVICES. EVALUATIONS  
OF WEAVE CONSTRUCTION AND CONTINUOUS PRODUCTION  
PROCESSES FOR A PROMISING NEW FABRIC WERE INITIATED.  
INVESTIGATION OF A NEW POLYCARBONATE ELASTOMER AS A  
RESIN BINDER COMMENCED. PHYSICAL TESTING  
EMPHASIZED WET STRENGTH RETENTION AND TEAR STRENGTH  
MEASUREMENTS. A NITRILE SILICONE FLUID AS PRIMER  
EXHIBITED EXCEPTIONAL WET STRENGTH RETENTION.  
PRECISION SLITTING EXPERIENCE WAS GAINED. FINAL  
TAPE SAMPLES, THE FIRST REQUIRING SEMICONTINUOUS  
PROCESSING EQUIPMENT, WERE SUPPLIED. A  
GLASSREINFORCED MAGNETIC TAPE BASE WITH ADVANTAGES  
WARRANTING CONTINUED DEVELOPMENT WAS ACHIEVED.

(AUTHOR)

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-612 541

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB

DIVISION 2, DATA SYSTEMS. (U)

DESCRIPTIVE NOTE: QUARTERLY PROGRESS REPT. FOR 1 NOV 64-

21 JAN 65,

FEB 65 25P FRICK, F. C. I

CONTRACT: AF19 628 500

MONITOR: ESD , TDR-65-47

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 008.

DESCRIPTORS: (\*COMPUTERS, SCIENTIFIC RESEARCH),  
(\*MAGNETIC TAPE, SCIENTIFIC RESEARCH), (\*PSYCHOLOGY,  
SCIENTIFIC RESEARCH), (\*DATA PROCESSING SYSTEMS,  
COMPUTERS), DATA PROCESSING SYSTEMS, COMPUTER STORAGE  
DEVICES, ANALOG-DIGITAL COMPUTERS, DIODES, ALUMINUM  
COMPOUNDS, OXIDES, CONTROL, TRANSISTORS, RECALL,  
PERCEPTION (PSYCHOLOGY), CONTROL SYSTEMS (U)  
IDENTIFIERS: TX COMPUTERS, APEX (AUTOMATIC PROCEDURE  
EXECUTOR) (U)

CONTENTS: DIGITAL COMPUTERS---GROUP 23  
COMPUTER SYSTEMS CIRCUIT DEVELOPMENT  
MAGNETIC FILM ENGINEERING SYSTEM PROGRAMMING  
AND APPLICATIONS COMPUTER COMPONENTS---GROUP 24  
MAGNETIC FILMS ELECTRON TRANSPORT PSYCHOLOGY-  
--=GROUP 25 AUTOMATIC PROCEDURE EXECUTOR  
HUMAN INFORMATION PROCESSES CONTROL RESEARCH---  
GROUP 26 HYBRID COMPUTER SYSTEMS ESTIMATION  
AND CONTROL STUDIES. (U)

UNCLASSIFIED

DOE REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-612 769

MASSACHUSETTS INST OF TECH LEXINGTON LINCOLN LAB  
DESIGN ASPECTS OF MINIMAL-POWER DIGITAL  
CIRCUITRY,

FEB 65 33P SCHMIDT,W. G. SCHACE,D. E. I (U)  
REPT. NO. GR-1965-8  
CONTRACT: AF19 628 500  
MONITOR: ESD TDR-65-45

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*DIGITAL COMPUTERS,  
CIRCUITS), (\*CIRCUITS, DESIGN), (\*MICROMINIATURIZATION  
(ELECTRONICS), CIRCUITS), (\*SPACECRAFT, DIGITAL  
COMPUTERS), SEMICONDUCTOR DEVICES, RELIABILITY  
(ELECTRONICS), TRANSISTORS, COMPUTER LOGIC, COMPUTER  
STORAGE DEVICES, RELAXATION OSCILLATORS, GATES  
(CIRCUITS), POWER

IDENTIFIERS: MINIMAL-POWER CIRCUITRY (U)

MINIMAL-POWER DIGITAL CIRCUITRY, WHILE A NECESSITY  
FOR SPACECRAFT OPERATION, HAS ADVANTAGES WHICH APPLY  
TO BOTH SPACE-BORNE AND GROUND-BASED DIGITAL DATA  
PROCESSING. SOME OF THE LOW-POWER DIGITAL CIRCUIT  
DESIGN EFFORTS ARE PRESENTED IN WHICH LINCOLN  
LABORATORY HAS BEEN ENGAGED FOR THE PAST FEW YEARS.  
THESE TECHNIQUES HAVE BEEN EMPLOYED IN A NUMBER OF  
SCIENTIFIC SATELLITES AND SPACE PROBES; SIMILAR  
DESIGNS ARE TO BE USED IN THE LINCOLN  
EXPERIMENTAL SATELLITE (LES). THE INFLUENCE OF  
NEW SEMICONDUCTOR DEVICES UPON THE MINIMAL-POWER  
CONCEPT IS DISCUSSED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-612 162

FRANKFORD ARSENAL PHILADELPHIA PA RESEARCH AND DEVELOPMENT  
DIRECTORATE  
DEVELOPMENT OF A PARALLEL OUTPUT PRINTER FOR THE  
FADAC COMPUTER.

(U)

DESCRIPTIVE NOTE: INTERIM REPT.,

DEC 64 47P MUNNICH, ROBERT F. I  
REPT. NO. M65-10-1  
PROJ: IW542709D36108

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LEGIBLE REPRODUCTION. REPRODUCTION WILL BE MADE IF  
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SALE.

DESCRIPTORS: (\*INPUT-OUTPUT DEVICES; DESIGN),  
(\*TYPEWRITERS; COMPUTERS), COMPUTER LOGIC, CIRCUITS,  
WIRING DIAGRAMS, PROGRAMMING (COMPUTERS), OPERATION (U)  
IDENTIFIERS: FADAC COMPUTER (U)

THIS REPORT CONTAINS A DESCRIPTION OF THE FUNCTIONS  
AND DESIGN DETAILS OF THE FADAC OUTPUT TYPEWRITER  
(FADOT), WHICH WAS FABRICATED SPECIFICALLY FOR  
LABORATORY USE WITH THE FADAC COMPUTER. THE  
MACHINE CONSISTS OF A MODIFIED IBM SELECTRIC INPUT/  
OUTPUT TYPEWRITER AND INTERFACE ELECTRONICS.  
LOGIC, CIRCUITRY AND OPERATION DETAILS ARE  
PROVIDED. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-614 010

CATHOLIC UNIV OF AMERICA WASHINGTON D C  
RESEARCH ON THE APPLICATION OF FERRO-AND  
FERRIELECTRIC PHENOMENA IN COMPUTER DEVICES. (U)

DESCRIPTIVE NOTE: FINAL REPT. FOR AUG 62-OCT 64

FEB 65 77P PULVARI,CHARLES F. I

CONTRACT: AF33 657 8871

PROJ: 4160

TASK: 416004

MONITOR: RADC TR-64-529

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SALE.

DESCRIPTORS: (\*FERROELECTRIC CRYSTALS, COMPUTER  
LOGIC, (\*COMPUTER LOGIC, FERROELECTRIC CRYSTALS),  
(\*COMPUTER STORAGE DEVICES, FERROELECTRIC CRYSTALS),  
(\*BISMUTH COMPOUNDS, OXIDES), DIELECTRICS, SWITCHING  
CIRCUITS, CAPACITORS; POLARIZATION, FERROELECTRIC  
MATERIALS, COMPUTERS (U)

IDENTIFIERS: TRANSPOLARIZERS, BISMUTH OXIDES (U)

THE OBJECTIVE OF THIS RESEARCH WAS TO DEMONSTRATE  
THAT CAPACITOR ELEMENTS COMPOSED OF FERRIELECTRICS OF  
THE MBO TYPE EMPLOYED AS A DIELECTRIC REPRESENT AN  
IMPORTANT IMPROVEMENT AS COMPARED TO ORDINARY  
FERROELECTRIC CAPACITORS AND THAT THEY CAN BE  
UTILIZED AS A LOGIC AND MEMORY DEVICE. FABRICATION  
TECHNIQUES OF THESE FERRIELECTRIC DEVICES ARE  
DISCUSSED WITH A SPECIAL EMPHASIS ON THE PREPARATION  
OF UNIFORMITY WHEN LARGE QUANTITIES OF SUCH DEVICES  
ARE FABRICATED. THE DEVELOPMENT OF FIELD  
CONTROLLED POLARIZATION TRANSFER DEVICES  
(TRANSPOLARIZERS) CONTINUED UTILIZING UNIFORM  
QUALITY FERRIELECTRIC CRYSTALS AS A DIELECTRIC.  
THE DEVELOPMENT OF VARIOUS LOGIC CIRCUITS IS  
PRESENTED AND FOR THE FIRST TIME A HALF ADDER WAS  
SUCCESSFULLY OPERATED UTILIZING CAPACITORS EXHIBITING  
FERROELECTRIC PROPERTIES AS SWITCHING ELEMENTS. A  
SMALL SECTION OF A RANDOM ACCESS MEMORY WAS  
CONSTRUCTED AND INVESTIGATED UTILIZING FERRIELECTRIC  
TRANSPOLARIZERS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-613 215

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
ON THE SYNTHESIS OF CONTROL SYSTEMS FOR AN ELECTRONIC  
DIGITAL COMPUTER, (U)

APR 65 25P BRUEVICH,N. G. I  
REPT. NO. FTD-TT-64-785  
MONITOR: TT , 65-62215

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
AKADEMIYA NAUK SSSR, IZVESTIYA, ENERGETIKA I  
TRANSPORT N4 P93-106 1961.

DESCRIPTORS: (\*DIGITAL COMPUTERS, PROGRAMMING  
(COMPUTERS)), (\*PROGRAMMING COMPUTERS, DIGITAL  
COMPUTERS), (\*CONTROL SYSTEMS, SYNTHESIS), COMPUTER  
LOGIC, COMPUTER STORAGE DEVICES, SIGNALS, TRIGGER  
CIRCUITS, SWITCHING CIRCUITS, USSR (U)

TRANSLATION OF RUSSIAN RESEARCH: SYNTHESIS OF  
CONTROL SYSTEMS FOR AN ELECTRONIC DIGITAL COMPUTER.

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000396

AD-616 269  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
COMPUTER TECHNOLOGY, 1963, NO. 2 (SELECTED  
ARTICLES);  
MAY 63 SOP ASCYAN, L. M. GEVORKYAN, M. G.;  
REPT. NO. FTD-TT-63-108 (U)  
MONITOR: TT , 62431

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
MOSKOVSKOE VYSSHEE TEKHNICHESKOE UCHILISHCHE,  
VYCHISLITEL'NAYA TEKHNIKA (USSR) N3 P74-90; 103-21  
1963.

DESCRIPTORS: (+DIGITAL COMPUTERS, RESONATORS),  
(+COMPUTER LOGIC, RESONATORS), CIRCUITS,  
SWITCHING CIRCUITS, TRIGGERING CIRCUITS,  
CAPACITORS, RESISTORS, OSCILLATORS, FERRITES,  
MAGNETIC CORE STORAGE, TRANSFORMERS,  
DIODES (SEMICONDUCTOR), MAGNETIC TAPE, USSR,  
COMPUTERS  
IDENTIFIERS: PARAMETRONS (U)

CONTENTS: THE PARAMETRON: AN ELEMENT IN  
DIGITAL COMPUTERS, BY L. M. ASOYAN; GENERAL  
INFORMATION ON PARAMETRONS; FUNDAMENTAL PROPERTIES  
OF PARAMETRIC OSCILLATIONS; OPERATING PRINCIPLE OF  
THE PARAMETRON; VARIABLE-INDUCTANCE PARAMETRON;  
MULTIPOLE FERRITE PARAMETRONS; VARIABLE-CAPACITANCE  
PARAMETRONS; MAGNETIC-FILM PARAMETRONS; THREE-CYCLE  
AND TWO-CYCLE METHODS OF DRIVING PARAMETRONS;  
CONSTRUCTION OF PARAMETRON LOGIC CIRCUITS; CERTAIN  
PROBLEMS IN THE INVESTIGATION OF THE PARAMETRON, BY  
L. M. ASOYAN AND M. G. GEVORYAN; CALCULATIONS  
OF PARAMETRON DRIVING CURRENT AND DETERMINATION OF  
SPECIFICATIONS FOR CORE MATERIAL; DETERMINING OPTIMUM  
OPERATING POINT; CERTAIN WAYS TO REDUCE THE POWER  
DRAWN BY THE PARAMETRON; DETERMINING THE PARAMETERS  
OF THE PARAMETRON RESONANCE NETWORK; CALCULATING  
THE PARAMETERS OF THE COUPLING TRANSFORMER;  
DETERMINATION OF THE LARGEST NUMBER OF PARAMETRONS  
THAT CAN BE CONNECTED AT THE OUTPUT OF A CONTROL  
PARAMETRON; DETERMINING RISE AND FALL TIMES OF THE  
SUBHARMONIC OSCILLATIONS IN THE PARAMETRON;  
DETERMINING THE LARGEST NUMBER OF INPUT SIGNALS  
THAT CAN BE CONNECTED AT A PARAMETRON'S INPUT. (U)

UNCLASSIFIED

AGC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-618 491

TEXAS INSTRUMENTS INC - TALLAS  
FABRICATION AND TESTING OF CRYOGENIC ASSOCIATIVE  
PROCESSOR PLANES.

(U)

DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR 5 MAY-13  
DEC 64.

MAY 68 60P PRITCHARD, J. PAUL ,JR.,  
REPT. NO. 08-68-11  
CONTRACT AF20 602 3423  
PROJ: 5561  
TASK: 558109  
MONITOR: RADC , TR-68-74

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+COMPUTER STORAGE DEVICES, THIN FILMS(STORAGE DEVICES)), (+THIN FILMS(STORAGE DEVICES), SUPERCONDUCTORS), CRYOGENICS, DATA PROCESSING SYSTEMS, COMPUTER LOGIC, CIRCUITS

(U)

IDENTIFIERS: THIN FILMS, THIN FILMS  
ELECTRONICS

(M)

FEASIBILITY IS ESTABLISHED OF A UNIQUE PHOTOMASKPHOTORESIST PROCESS FOR FABRICATION OF A 120-BIT, 2950-CRYOTRON ASSOCIATIVE MEMORY PLANE. A SET OF NINE PHOTOMASKS DEFINES THE FIVE SUPERCONDUCTIVE AND FOUR INSULATING MATERIAL LAYERS OF THE STRUCTURE. THE THIN FILM CIRCUITRY OCCUPIES A 4 SQUARE INCH AREA OF A 2.4 INCH X 2.4 INCH GLASS SUBSTRATE. TWO HUNDRED AND FIFTY SOLDER LANDS, 0.007 INCH X 0.10 INCH ON 0.014 INCH CENTERS, ARE SUITABLY GROUPED AROUND THE SUBSTRATE PERIMETER FOR PRESSURE CONTACT WITH THE DATA LINK. SEVEN SHORT-FREE MEMORY PLANES WERE SUCCESSFULLY PRODUCED WITH INTENDED SIGNAL PATH CONTINUITY, AS ESTABLISHED BY DC TESTS AT 300K AND BELOW 9.5K. DIFFICULTIES IN SIMULTANEOUSLY ACHIEVING SUPERCONDUCTIVE PRESSURE CONTACT AT ALL SOLDER LANDS PRECLUDED MEMORY OPERATION; HOWEVER, CURRENT LOOP SWITCHING AND TRAPPING WERE DEMONSTRATED FOR ACCESSIBLE CRYOTRON CIRCUIT SEGMENTS. SOLUTIONS TO THIS UNANTICIPATED INTERCONNECTION PROBLEM WERE SUBSEQUENTLY CONCEIVED AND DEMONSTRATED. (AUTHOR)

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-819 981

INFODRONICS INC MAYNARD MASS  
TEXT REPORTING AND EDITING DEVICE: COMPARATIVE  
OPERATIONAL PERFORMANCE.

(U)

DESCRIPTIVE NOTE: FINAL REPT. FOR JUN 64-APR 65.  
JUL 65 22P NUGENT, WILLIAM R. I  
CONTRACT: AF20 602 3088  
PROJ: 4894  
MONITOR: RADC . TR-65-195

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES

DESCRIPTORS: (\*PUNCHED TAPE, PROCESSING),  
DOCUMENTATION, PREPARATION, COSTS, ABSTRACTING,  
TIME STUDIES, COMPUTERS, TYPEWRITERS, READING,  
PERFORMANCE(HUMAN), MACHINES  
IDENTIFIERS: FLEXOWRITERS

(U)

(U)

THE TEXT REPORTING AND EDITING DEVICE  
(TEXT EDITOR) IS A SMALL SCALE, HIGH SPEED TAPE  
PROCESSOR THAT WAS DEVELOPED UNDER THE INITIAL PART  
OF U.S. AIR FORCE CONTRACT AF20(602)-  
3088. THE MACHINE'S FUNCTION IS TO SPEED THE  
PREPARATION OF ERROR-FREE TEXT FOR COMPUTER ENTRY.  
BY MEANS OF THIS DEVICE, DATA ON PERFORATED TAPES  
MAY BE RAPIDLY CORRECTED OR UPDATED VIA SIMPLIFIED  
PUSHBUTTON CONTROL. THE MACHINE HAS BEEN DESCRIBED  
IN DETAIL IN RADC-TDR-64-31, APRIL 1964.  
THIS REPORT DESCRIBES THE RESULTS OF OPERATIONAL  
TESTING OF THE TEXT EDITOR IN THE PREPARATION OF  
AN EXTENSIVE MACHINE FILE OF DOCUMENT ABSTRACTS.  
THE OVERALL PROCESSES OF DATA PREPARATION WERE  
STUDIED AND TIME AND COST FIGURES WERE OBTAINED.  
COMPARISONS OF EDITING TIMES AND COSTS WERE MADE  
WITH RESPECT TO THREE OTHER SYSTEMS OF EDITING:  
OFF-LINE FLEXOWRITER, ON-LINE COMPUTER TYPEWRITER,  
AND ON-LINE COMPUTER WITH CRT DISPLAY. (AUTHOR)

(U)

UNCLASSIFIED

AAC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-A20 913  
MARRQUARDT CORP VAN NUYS CALIF  
ASSOCIATIVE TAG MEMORY. (U)  
DESCRIPTIVE NOTE: FINAL TECHNICAL REPT. FOR JUL 64-KPK  
65.  
JUL 65 92P HAAS, RALPH W.; BLEVINS, EARL  
W. I  
REPT. NO. 637/885/4266  
CONTRACT AF30 602 3471  
PROJ. 6561  
TASK: 958108  
MONITOR: RADC , TR-65-178

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTIONS: (\*COMPUTER STORAGE DEVICES,  
FEASIBILITY STUDIES), (\*PHOTOELECTRIC MATERIALS;  
COMPUTER STORAGE DEVICES), (\*FERROELECTRIC  
MATERIALS; COMPUTER STORAGE DEVICES), DIGITAL  
COMPUTERS, DATA STORAGE SYSTEMS, COMPUTER LOGIC,  
FERROELECTRIC CRYSTALS, SINGLE CRYSTALS, THIN  
FILMS(STORAGE DEVICES), ELECTRON OPTICS,  
SWITCHING CIRCUITS, PHOTONS (U)

IDENTIFIERS: ASSOCIATIVE TAG MEMORY, THIN FILMS,  
THIN FILMS ELECTRONICS (U)

A RESEARCH AND DEVELOPMENT PROGRAM WAS CONDUCTED TO  
DEMONSTRATE THE PRINCIPLE FEASIBILITY OF UTILIZING  
FERROELECTRIC AND PHOTOCONDUCTOR ELEMENTS TO  
IMPLEMENT AN ASSOCIATIVE TAG MEMORY. AN ANALYTICAL  
STUDY WAS PERFORMED TO PROVIDE AN INSIGHT TO THE  
VARIOUS DESIGN TRADEOFFS OF IMPLEMENTATION. A  
MATERIAL EFFORT WAS DIRECTED TOWARD PRODUCING BOTH  
THIN FILM AND SINGLE CRYSTAL MATERIALS. A SMALL  
BREADBOARD MODEL WAS CONSTRUCTED WHICH DEMONSTRATED  
THE ABILITY OF STRING OF PHOTOCONDUCTOR AND  
FERROELECTRIC ELEMENTS TO PROVIDE SIGNAL INDICATION  
FOR VARIOUS MATCH CONDITIONS. A LOGIC UTILIZING  
THIS IMPLEMENTATION WAS DEVELOPED FOR A NUMBER OF  
INQUIRY COMMANDS. (AUTHOR) (U)

UNCLASSIFIED

SDC REPORT RISLOGRAPHY SEARCH CONTROL NO. 800296

AB-671 OPS

FOREIGN TECHNOLOGY DIV BRIGHT-PATTERSON AFB OHIO  
MAGNETIC INTEGRATION AND DIFFERENTIATION OF ELECTRIC  
SIGNALS. (U)

JUN 68 9P POZENBLAT, M. AV. SKASATKIN, O. G.

REPORT NO. FTD-T-68-217  
MONITOR TT 4 65-63954

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
AKADEMIYA NAUK SSSR, DOKLADY, VISA N° 1066-9 1964.

DESCRIPTORS: (\*MAGNETIC CORE STORAGE, ANALOG  
COMPUTERS), (\*ANALOG COMPUTERS, MAGNETIC CORE  
STORAGE), MAGNETIC CORES, FERROMAGNETIC MATERIALS,  
ELECTRIC CURRENT, SIGNALS, ELECTROMAGNETIC  
PULSES, INTEGRATORS(COMPUTERS), DIFFERENTIATING  
CIRCUITS, USSR (U)

THIS REPORT DISCUSSES THE APPLICATION OF BRANCHED  
MAGNETIC CORES OF FERROMAGNETIC MATERIALS, WITH A  
RECTANGULAR HYSTERESIS, TO ANALOG MEMORY DEVICES. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-624 806 9/2 20/12  
RCA LABS DIV RADIO CORP OF AMERICA PRINCETON N J  
CRYOELECTRIC RANDOM ACCESS MEMORY, PHASE III. (U)  
DESCRIPTIVE NOTE: FINAL REPT., VOL. 1, 1 MAR 64-31 AUG  
65.

NOV 65 387P BURNS, L. L. I  
CONTRACT: AF30(602)-7000  
PROJ: 5581  
TASK: 558108  
MONITOR: HADC , TR-65-405-VOL-1

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-609 469.

DESCRIPTORS: (CRYOGENIC STORAGE DEVICES, THIN FILMS(STORAGE DEVICES)), (COMPUTER STORAGE DEVICES, DIGITAL COMPUTERS), DATA STORAGE SYSTEMS, TIN, GRAIN STRUCTURES(METALLURGY), GEOMETRY, SUPERCONDUCTORS, CRYOGENICS, ELECTRICAL NETWORKS, COMPUTER LOGIC, THERMODYNAMICS

IDENTIFIERS: RANDOM ACCESS MEMORY

(U)  
(U)

A PROGRAM IS DISCUSSED FOR THE DEVELOPMENT OF A LARGE CAPACITY, RANDOM-ACCESS CRYOELECTRIC MEMORY. THEORETICAL STUDIES WERE UNDERTAKEN ON THE CRYOELECTRIC MEMORY. THESE STUDIES SHOWED THAT THE DETAILED ELECTRODYNAMIC BEHAVIOR OF CONTINUOUS FILM SUPERCONDUCTING MEMORIES CAN BE SPECIFIED. IT IS SHOWN THAT THE MOST IMPORTANT SINGLE PARAMETER IS THE UNIFORMITY OF THE GRAIN STRUCTURE IN THE TIN MEMORY FILM ITSELF. SIZE VARIATIONS GREATER THAN 2:1 OF THE MICROCRYSTALLITES OF TIN FORMING THE MEMORY FILM WILL MAKE IT PRACTICALLY IMPOSSIBLE TO BUILD A PLANE WITH A UNIFORMITY OF DRIVE CURRENTS THAT IS SATISFACTORY FOR PROPER OPERATION IN A MEMORY STACK. ANOTHER IMPORTANT PARAMETER IS THE GEOMETRICAL CONTROL OF THE WIDTH OF THE DRIVE AND SENSE LINES WHEN OTHER THAN CAVITY SENSING TECHNIQUES ARE USED. IT IS SHOWN THAT CAVITY SENSING WORKS QUITE SATISFACTORILY FOR SMALL STRUCTURES, BUT IS NOT USEABLE FOR LARGE STRUCTURES. TWO EXPRESSIONS WERE DEVELOPED FROM DIFFERENT POINTS OF VIEW THAT GIVE ESSENTIALLY THE SAME ANSWER WITH REGARD TO THE VARIATION IN SENSE SIGNAL FOR CAVITY SENSING STRUCTURES OVER A PLANE. A PRACTICALLY EXACT SOLUTION TO THE OUTPUT FROM A LINE SENSE STRUCTURE IS DEVELOPED, AND IT IS SHOWN THAT A 1-MV SENSE SIGNAL CAN REASONABLY BE EXPECTED FOR CRYOELECTRIC MEMORY CELLS OF A SIZE SUCH THAT 10,000 CAN BE PUT IN ONE SQUARE INCH. THE VORTEX THEORY OF SUPERCONDUCTIVE (U)

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800396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-629 788 9/2  
NAVAL ORDNANCE LAB WHITE OAK MD  
THE DISAC MAGNETIC TAPE SYSTEM AND PERIPHERAL  
EQUIPMENT CONTROLS. (U)  
DEC 65 114P PRYOR,C. N. DAVIS,R. H. S  
REPT. NO. NOLTR-64-158,  
TASK: ASN2-12000/211-1/F101-10-02,

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-610 052.

DESCRIPTORS: (\*DIGITAL COMPUTERS, SIMULATION),  
(\*EAPON SYSTEMS, SIMULATION), (\*MAGNETIC TAPE;  
DIGITAL COMPUTERS), INPUT-OUTPUT DEVICES,  
PUNCHED CARDS, PUNCHED TAPE (U)  
IDENTIFIERS: DISAC (U)

THE REPORT DESCRIBES THE CHARACTERISTICS AND  
OPERATION OF THE DIGITAL INPUT-OUTPUT DEVICES  
ATTACHED TO THE DISAC SYSTEM. DETAILED OPERATING  
CHARACTERISTICS OF EACH DEVICE ARE GIVEN, FROM THE  
VIEWPOINT OF THE USER. DESCRIPTIONS AND COMPLETE  
DIAGRAMS OF ALL CONTROL CIRCUITRY ARE GIVEN TO  
FACILITATE SYSTEM MAINTENANCE. (AUTHOR) (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-620 918 5/1 9/2 17/9 12/12  
20/12

LINCOLN LAB MASS INST OF TECH LEXINGTON  
GENERAL RESEARCH.

(U)

DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT. I  
NOV 65-21 JAN 66.

FER 66 61P FRICK, FREDERICK C., INEDZEL, V.  
ALEXANDER IDODD, STEPHEN H., CHERLIN, MELVIN A.  
FREEDMAN, JEROME I

CONTRACT: AF 19(628)-5167.

PROJ: AF-649L

MONITOR: ESO ; TDR-66-21

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-627 920.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, SCIENTIFIC  
RESEARCH), (+RADAR, SCIENTIFIC RESEARCH),  
(+ENGINEERING, SCIENTIFIC RESEARCH), (+SOLID  
STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL  
COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY,  
CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS,  
RADIO ASTRONOMY, MOON, PLANETS, MICROWAVE  
EQUIPMENT, MICROWAVE AMPLIFIERS, MILLIMETER  
WAVES, ANTENNA FEEDS, RADAR ANTENNAS,  
SEMICONDUCTOR DEVICES, OPDAR, RADAR STATIONS,  
GUIDED MISSILE LAUNCHERS, OPTICS,  
MATERIALS

(U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE  
FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS  
(COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC  
FILM ENGINEERING, SYSTEM PROGRAMMING AND  
APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC  
FILMS, OPTICS, ELECTRON TRANSPORT); PSYCHOLOGY  
(MAN-COMPUTER INTERACTION, HUMAN INFORMATION  
PROCESSING); CONTROL RESEARCH (COMPUTATION CENTER  
DEVELOPMENT, HYBRID COMPUTATIONAL FACILITY);  
SURVEILLANCE TECHNIQUES (SPACE SURVEILLANCE, LUNAR  
STUDIES, PLANETARY STUDIES, ATMOSPHERIC STUDIES,  
RADIO ASTRONOMY); MICROWAVE COMPONENTS (HAYSTACK  
MICROWAVE COMPONENTS, SOLID-STATE AMPLIFIERS,  
MILLIMETER-WAVELENGTH PROGRAM, MODIFICATION TO  
TRADEY ERROR HORNS); MECHANICAL ENGINEERING  
(HAYSTACK, SOLID STATE RESEARCH, LASER RADAR,  
STRUCTURES RESEARCH); PHYSICAL PLANT ENGINEERING  
(HAYSTACK HILL, MILLSTONE HILL); CONTROL  
SYSTEMS (NIKE-AJAX OPTICAL MOUNT, HAYSTACK);  
SOLID STATE DEVICE RESEARCH; OPTICAL TECHNIQUES AND  
DEVICES; MATERIALS RESEARCH; PHYSICS OF SOLIDS.

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-634 819 9/1 9/2 17/2.1 17/9  
20/12

LINCOLN LAB MASS INST OF TECH LEXINGTON  
GENERAL RESEARCH.

(U)

DESCRIPTIVE NOTE: QUARTERLY TECHNICAL SUMMARY REPT.,  
MAY 66 53P FRICK, FREDERICK C. I  
NEDZEL, V. ALEXANDER IDODD, STEPHEN H. I  
HERLIN, MELVIN A. IFREEDMAN, JEROME I  
CONTRACT: AF 19(628)-5167,  
PROJ: AF-649L,  
MONITOR: ESD TR-66-205

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-620 918.

DESCRIPTORS: (+DATA PROCESSING SYSTEMS, SCIENTIFIC  
RESEARCH), (+RADAR, SCIENTIFIC RESEARCH),  
(+ENGINEERING, SCIENTIFIC RESEARCH), (+SOLID  
STATE PHYSICS, SCIENTIFIC RESEARCH), DIGITAL  
COMPUTERS, COMPUTER STORAGE DEVICES, PSYCHOLOGY,  
CONTROL SYSTEMS, SPACE SURVEILLANCE SYSTEMS,  
RADIO ASTRONOMY, PLANETS, MICROWAVE EQUIPMENT,  
LASERS, SEMICONDUCTOR DEVICES, RADAR ANTENNAS  
IDENTIFIERS: HAYSTACK HILL ANTENNAS, MILLSTONE

(U)

RADAR (U)

SUMMARIES ARE GIVEN OF PROGRESS AND RESULTS IN THE  
FOLLOWING RESEARCH AREAS: DIGITAL COMPUTERS  
(COMPUTER SYSTEMS, CIRCUIT DEVELOPMENT, MAGNETIC  
FILM ENGINEERING, SYSTEM PROGRAMMING AND  
APPLICATIONS); COMPUTER COMPONENTS (MAGNETIC  
FILMS, OPTICS, ELECTRON TRANSPORT, ADVANCED  
CIRCUITS); PSYCHOLOGY (ON-LINE COMPUTING SERVICES  
FOR SCIENTISTS AND ENGINEERS, HUMAN INFORMATION  
PROCESSING, QUANTITATIVE METHODS); COMPUTER SYSTEMS  
(COMPUTATION CENTER DEVELOPMENT, HYBRID  
COMPUTATIONAL FACILITY); SURVEILLANCE TECHNIQUES  
(OPERATION, MAINTENANCE, AND IMPROVEMENTS, SPACE  
SURVEILLANCE, LUNAR STUDIES, PLANETARY STUDIES,  
ATMOSPHERIC STUDIES, RADIO ASTRONOMY, SPACE  
COMMUNICATION); MICROWAVE COMPONENTS  
(INTRODUCTION, HAYSTACK MICROWAVE COMPONENTS,  
SOLID-STATE AMPLIFIERS, VHF MODIFICATION TO  
TRADEX ERROR HORNS); MECHANICAL ENGINEERING  
(HAYSTACK, MILLSTONE, SOLID STATE RESEARCH, LASER  
RADAR, STRUCTURES RESEARCH); SOLID STATE DEVICE  
RESEARCH, OPTICAL TECHNIQUES AND DEVICES, MATERIALS  
RESEARCH, PHYSICS OF SOLIDS.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-635 229 9/2 5/8  
HUDSON LABS COLUMBIA UNIV DOBBS FERRY N Y  
FLEXOWRITER/DIOA SYSTEM.  
DESCRIPTIVE NOTE: TECHNICAL REPT. (U)  
FER 66 91P AMANN, CHARLES I  
KLERER, MELVIN I  
REPT. NO. TR-124, CU-149-66-ONR-266-PHYS  
CONTRACT: NONR-266(84),

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (+INPUT-OUTPUT DEVICES,  
PROGRAMMING(COMPUTERS), PUNCHED TAPE,  
TYPEWRITERS, MODULES(ELECTRONIC), COMPUTER  
LOGIC, DATA PROCESSING SYSTEMS, COMPUTERS  
IDENTIFIERS: FLEXOWRITERS (U)

(U)

THE REPORT DOCUMENTS THE HARDWARE USED TO INTERFACE  
THE FRIDEN FLEXOWRITER TO THE GE-225 COMPUTER  
IN USE AT HUDSON LABORATORIES. THIS HARDWARE  
CAN ALSO BE USED AS A GENERAL PURPOSE INTERFACE FOR  
LOW SPEED DATA TRANSMISSION. (AUTHOR) (U)

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800396

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-640 427 9/5 9/2  
ILLINOIS UNIV URBANA COORDINATED SCIENCE LAB  
MATRIX SWITCHES AND ERROR CORRECTING CODES FROM BLOCK  
DESIGNS. (U)  
AUG 66 48P BAHL,LALIT RAI I  
REPT. NO. R-314.  
CONTRACT: DA-28-049-AMC-00072(E), NSF-GK-690  
PROJ: DA-20014501821F.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: (\*SWITCHING CIRCUITS, \*MAGNETIC CORE  
STORAGE), ERRORS, COMPUTERS, CODING, DESIGN,  
MATRIX ALGEBRA, \*CORRECTIONS, COMBINATORIAL  
ANALYSIS (U)

METHODS OF OBTAINING MATRIX SWITCHES FROM BLOCK  
DESIGNS WERE FORMULATED BY SINGLETON AND NEUMANN.  
THE FIRST PART OF THE REPORT EXTENDS SINGLETON'S  
METHOD FOR DESIGNING UNIPOLAR SWITCHES TO THE DESIGN  
OF BIPOLAR SWITCHES. A NEW CLASS OF LOW NOISE  
SWITCHES IS OBTAINED BY PERMUTATION OF THE WINDING  
MATRIX OF NOISELESS SWITCHES AND IT IS SHOWN HOW  
THESE NEW SWITCHES ARE RELATED TO BLOCK DESIGNS.  
THE LATTER PART OF THE REPORT IS CONCERNED WITH  
METHODS OF OBTAINING ERROR DETECTING AND ERROR  
CORRECTING CODES FROM BLOCK DESIGNS. SOME OF THESE  
CODES ARE FOUND TO BE OPTIMAL. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 492 9/2  
CARSON LABS INC BRISTOL CONN  
OPTICAL MATRIX MULTIPLIER.  
DESCRIPTIVE NOTE: FINAL REPT., JUL 65-JUN 66,  
AUG 66 26P CARSON,ARTHUR N. I  
CONTRACT: AF 19(628)-4211.  
PROJ: AF-4641,  
TASK: 464104,  
MONITOR: AFCRL 66-619

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-617 961.

DESCRIPTORS: (+ANALOG COMPUTERS, COMBINATORIAL ANALYSIS), (+COMPUTER STORAGE DEVICES, CRYSTALS), COLOR CENTERS, MATRIX ALGEBRA, OPTICAL PHENOMENA, COMPUTER LOGIC, DATA PROCESSING SYSTEMS, HALIDES, LASERS, SCANNING

(U)

IDENTIFIERS: OPTICAL COMPUTERS, ANALOG MULTIPLIERS

(U)

DEVELOPMENT WORK HAS BEEN PERFORMED ON A PARALLEL ANALOG, MATRIX MULTIPLIER FOR THE RAPID MULTIPLICATION OF VERY LARGE CAPACITY MATRICES USING OPTICAL STORAGE OF MATRIX ELEMENTS IN A COLORED CRYSTAL MEMORY AND PARALLEL OPTICAL MULTIPLICATION. THE ORIGINAL CONCEPT FOR THE SYSTEM, BASED ON THE USE OF THREE COLORED CRYSTALS (TWO FOR MATRIX-ELEMENT STORAGE, AND ONE FOR MULTIPLICATION) AND THREE WAVELENGTHS OF LIGHT FOR STORAGE, READOUT, AND MULTIPLICATION, RESPECTIVELY, WAS MODIFIED AND SIMPLIFIED. THE FINAL CONCEPT USED ONLY TWO CRYSTALS TO PERFORM THE DUAL FUNCTION OF STORAGE AND MULTIPLICATION, AND TWO COLORS OF LIGHT; IT ALSO INCORPORATED THE TECHNIQUE OF CONTINUOUS MONITORING DURING STORAGE TO ELIMINATE THE REQUIREMENT FOR LINEARITY OF COLOR CONVERSION DURING STORAGE. THE PRINCIPAL FINAL DIFFICULTY AT COMPLETION OF THE CONTRACT WAS THE INABILITY TO DEMONSTRATE ADEQUATE COLOR CONVERSION RATES IN WRITING MATRIX ELEMENTS INTO THE COLORED CRYSTAL TO ASSURE AN INTERESTING PRACTICAL DEVICE. SEVERAL PROMISING AVENUES FOR REMOVING THIS LIMITATION WITH FURTHER DEVELOPMENT WERE DESCRIBED. A LABORATORY BENCH-MODEL MATRIX MULTIPLIER WAS CONSTRUCTED AND USED TO DEMONSTRATE MATRIX ELEMENT MONITORING AND MULTIPLICATION.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-640 599 9/2 12/1  
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD  
DIFFERENTIAL ANALYZER-ELECTRICAL ASPECTS OF  
OPERATION, (U)  
DEC 47 66P LYNCH, JEREMIAH I  
REPT. NO. 694,  
PROJ: T82-0007.

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE:

DESCRIPTORS: ((ANALOG COMPUTERS; ELECTRICAL EQUIPMENT); OPERATION; INTEGRATORS(COMPUTERS); DIFFERENTIAL EQUATIONS; ELECTRIC MOTORS; AMPLIFIERS) (U)

I. GENERAL DESCRIPTION OF ELECTRICAL COMPONENTS OF ANALYZER (A DEVICE FOR MECHANICALLY SOLVING ORDINARY DIFFERENTIAL EQUATIONS); INTEGRATORS AND ASSOCIATED CIRCUITS, TABLES AND ASSOCIATED CIRCUITS, INDEPENDENT-VARIABLE MOTOR AND ITS CONTROLS, PRINTER, AND AUXILIARY UNITS. II. EXPLANATION OF CIRCUIT DIAGRAMS; BALANCER CONTROL CIRCUIT, CIRCUITS CONNECTING THE BALANCER CONTROL AND AMPLIDYNE CABINETS TO THE MACHINE, CONNECTIONS AT INTEGRATOR AND TABLE JUNCTION BOXES, AMPLIFIER AND ASSOCIATED CIRCUITS, INDEPENDENT-VARIABLE CONTROL PANEL, PRINTER CIRCUITS, AND SAFETY DEVICES. III. PROCEDURES TO BE FOLLOWED BY THE OPERATORS IN OPERATION AND REPAIR. IV. TROUBLE SHOOTING ON AMPLIFIERS. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-644 429 9/2 9/2  
NORTHWESTERN UNIV EVANSTON ILL INFORMATION-PROCESSING AND  
CONTROL SYSTEMS LAB  
A CRYOGENIC ASSOCIATIVE MEMORY SYSTEM FOR INFORMATION  
RETRIEVAL. (U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
NOV 66 BP YAU,S. S. LYANG,C. C. I  
REPT. NO. TR-66-106  
CONTRACT NO0014-66-C-0020, AF-AFOSR-98-65

UNCLASSIFIED REPORT  
AVAILABILITY: PUBLISHED IN PROCEEDINGS OF THE  
NATIONAL ELECTRONICS CONFERENCE V22 P764-9 1966.

DESCRIPTORS: (+DATA STORAGE SYSTEMS;  
CRYOGENICS), (+INFORMATION RETRIEVAL; DATA  
STORAGE SYSTEMS), LOGIC CIRCUITS,  
PERFORMANCE(ENGINEERING), OPERATION (U)

THE PAPER PRESENTS A CRYOGENIC ASSOCIATIVE MEMORY  
SYSTEM WHICH CAN PERFORM BOTH NON-ORDERED AND ORDERED  
RETRIEVAL. SINCE THE OPERATIONS OF CRYOGENIC  
CIRCUITS ARE SLOWER THAN THAT OF MAGNETIC CORES AND  
CUTPOINT CELLS, THE SPEED APPEARS TO BE THE MAIN  
PROBLEM OF ALL CRYOGENIC ASSOCIATIVE MEMORY SYSTEMS.  
ATTEMPTS WERE MADE TO INCREASE THE OPERATING SPEED  
IN VARIOUS ASPECTS, SUCH AS MINIMIZING THE CIRCUIT  
INDUCTANCE, REDUCING THE NUMBER OF STAGE DELAYS, ETC.  
HOWEVER, FURTHER RESEARCH IN THE ORGANIZATION  
DESIGN SUCH AS THE DEVELOPMENT OF A HIGHER SPEED  
CIRCUIT FOR SUBSTITUTING THE TWO-RAIL LADDER NETWORK  
IS STILL REQUIRED TO INCREASE THE SPEED OF THE  
SYSTEM. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-647 247 9/2  
NAVAL AIR DEVELOPMENT CENTER JOHNSTONVILLE PA AERO+  
ELECTRONIC TECHNOLOGY DEPT  
NONDESTRUCTIVE READOUT (NDRO) FROM THIN MAGNETIC  
FILMS. (U)  
DESCRIPTIVE NOTES: FINAL REPT.,  
JAN 67 43P GREENBERG,S. OLIVERI,P. &  
REPT. NO. NADC-AE-6640

UNCLASSIFIED REPORT

DESCRIPTORS: (THIN FILM STORAGE DEVICES,  
RESISTANCE(ELECTRICAL)), MAGNETIC FIELDS,  
DATA STORAGE SYSTEMS,  
RELIABILITY(ELECTRONICS), FILMS, INPUT-  
OUTPUT DEVICES, FEASIBILITY STUDIES, INFORMATION  
RETRIEVAL (U)  
IDENTIFIERS: MAGNETORESISTIVE EFFECT, THIN FILMS,  
THIN FILMS ELECTRONICS (U)

FIVE SOLID STATE PHENOMENA WERE CONSIDERED FOR  
POSSIBLE USE IN NONDESTRUCTIVE READOUT (NDRO) FROM  
THIN MAGNETIC FILM MEMORIES. THE PHENOMENON OF  
MAGNETORESISTANCE IN MAGNETIC FILMS WAS CHOSEN AS THE  
MOST PROMISING, AND STUDIES WERE MADE OF THIS EFFECT.  
EXPERIMENTAL STUDIES OF THE SWITCHING  
CHARACTERISTICS OF CONFIGURATIONS INVOLVING MAGNETIC  
FILMS AND OTHER DEVICES, SUCH AS TUNNEL DIODES, WERE  
ALSO MADE. SEVERAL EXPERIMENTAL NDRO RANDOM  
ACCESS MEMORIES WERE BUILT TO DEMONSTRATE THE  
FEASIBILITY OF USING MAGNETORESISTANCE. THE  
ADVANTAGES OF THESE MEMORIES WERE LOW DRIVE CURRENTS  
AND GOOD S/N RATIO. A NEW TECHNIQUE FOR AN  
ASSOCIATIVE MEMORY WAS CONCEIVED, AND AN EXPERIMENTAL  
MODEL WAS BUILT TO DEMONSTRATE FEASIBILITY.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD-640 752 9/2 22/2  
SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF  
LARGE CAPACITY LASER MEMORY FOR SPACEBORNE  
COMPUTERS. (U)  
DESCRIPTIVE NOTE: PROFESSIONAL PAPER;  
FEB 67 IIP DRUGATCH,I; THANUS,S. I  
REPT. NO. SP-2665

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTER STORAGE DEVICES,  
+LASERS), (+COMPUTERS, SPACEBORNE),  
SCIENTIFIC SATELLITES, COMMUNICATION  
SATELLITES(ACTIVE), DESIGN (U)

THE REPORT DISCUSSES THE NECESSITY FOR A SPACEBORNE  
COMPUTER MEMORY OF AT LEAST 10 TO THE 7TH POWER BIT  
CAPACITY. IT IS SHOWN THAT SUCH A DEVICE COULD  
MINIMIZE COMPUTER HARDWARE AND, AT THE SAME TIME,  
MAKE FEASIBLE SUCH DEVICES AS SPACEBORNE RANDOM-  
MULTIPLE-ACCESS AND SYNERGETIC SATELLITES.  
(AUTHOR) (U)

UNCLASSIFIED

UDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-649 241 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
MEMORY UNIT, (U)  
JAN 67 6P LYUBCHANSKII, M. S.  
NEPT. NO. FTD-HT-67-4

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE! ZAPOMINAYUSHCHEE USTROISTVO,  
UNEEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 170 167,  
APPL. 912746/26-24, 20 JUL 64.

DESCRIPTORS: (+COMPUTER STORAGE DEVICES,  
\*COMPUTERS), MAGNETIC FIELDS, WINDING,  
ORIFICES, USSR (U)

A MEMORY DEVICE CONTAINING MATRICES OF MAGNETIC  
MULTIPLE-ORIFICE ELEMENTS WITH INTERROGATION WINDINGS  
PASSED THROUGH SOME OF THE OPENINGS OF THE ELEMENTS;  
OUTPUT WINDINGS PASSED THROUGH OTHER OPENINGS OF THE  
ELEMENTS; AND BIAS WINDINGS PASSED THROUGH THE SAME  
OPENINGS AS THE INTERROGATION WINDINGS WHICH HAS THE  
DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF  
SIMPLIFYING THE SCHEME OF CONTROL OF THE DEVICE IN  
EACH MATRIX DIVIDED IN TWO, THE WINDINGS OF  
INTERROGATION ARE PASSED THROUGH IN ONE HALF IN  
ACCORDANCE WITH THE BIAS WINDING, AND IN THE OTHER IN  
THE OPPOSITE DIRECTION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 600274

AD-A49 342 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
BUFFER MEMORY DEVICE. (U)  
JAN 67 6P GORSHKOV, A. F.;  
KIRPICHNIKOV, V. M.; ISTUNOV, M. N.;  
REPT. NO. FTD-HT-67-7

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: BUFERNOE ZAPOMINAYUSCHEE  
USTROISTVO, UNEDIYED ROUGH DRAFT TRANS. OF PATENT  
(USSR) 179 095, APPL. 907409/26-24, 22 JUN 64.

DESCRIPTORS: (\*COMPUTER STORAGE DEVICES;  
COMPUTERS), MAGNETIC CORES, QUADRATIC  
PROGRAMMING, GENERATORS, USSR (U)

A BUFFER MEMORY DEVICE BASED ON FERRITE CORES WHICH  
CONTAINS QUADRATIC MATRICES WITH HORIZONTAL BUSES,  
VERTICAL BUSES, WHICH HAS THE DISTINGUISHING FEATURE  
THAT, FOR THE PURPOSE OF SIMPLIFYING THE DEVICE, IT  
CONTAINS A GENERATOR CONNECTED UP TO HORIZONTAL BUSES  
OF A MATRIX, WHICH ASSURES THEIR SEQUENTIAL SORTING,  
GENERATORS OF REGULATED FIGURES CONNECTED TO VERTICAL  
BUSES, AND A GENERATOR OF READING CONNECTED TO  
DIAGONAL BUSES ASSURING THEIR SEQUENTIAL SORTING.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 414 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
STORAGE DEVICE. (U)  
JAN 67 6P STAROS,F. G. IBERG,I. V.  
IKREININ,S. I. ILASHEVSKI,I. R. A. I  
MAKSIMOV,M. N. I  
REPT. NO. FTD-HT-67-6

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: ZAPOMINAYUSHCHEE USTROISTVO,  
UNEDITED ROUGH DRAFT TRANS. OF PATENT (USSR) 178 178,  
APPL. 940357/26-24, 25 JAN 67.

DESCRIPTORS: (\*DATA STORAGE SYSTEMS,  
\*COMPUTERS), COMPUTER STORAGE DEVICES,  
MICROMINIATURIZATION(ELECTRONICS), DECODING,  
NUMBERS, WIRE, METAL PLATES, USSR (U)

A BRIEF DESCRIPTION OF A MEMORY DEVICE BASED ON  
MULTIPLE-ORIFICE FERRITE PLATES WHICH CONTAINS NUMBER  
PLATES AND THE PLATE OF A DECODER, WHICH HAS THE  
DISTINGUISHING FEATURE THAT, FOR THE PURPOSE OF  
SIMPLIFYING THE MANUFACTURE AND THE  
MICROMINIATURIZATION OF THE DEVICE, THE NUMBER WIRE  
MADE BY THE METHOD OF PRINTING ON THE NUMBER PLATE IS  
JOINED WITH THE WIRE PASSING THROUGH TWO OPENINGS OF  
THE DECODER, AND THE NUMBER PLATES TOGETHER WITH THE  
PLATE OF THE DECODER ARE PLACED IN A CASSETTE COATED  
WITH A HEAT REACTIVE COMPOUND. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-649 416 9/2 9/1  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
SHIFT REGISTER.  
JAN 67 7P KHVEDYNICH,V. P. S  
POLIKARPOV,P. N. I  
REPT. NO. FTD-HT-67-12

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
PATENT (USSR) 176 720, APPL. 910097/26/24 8 JUL 64.

DESCRIPTORS: (+SHIFT REGISTERS, \*MAGNETIC  
CORES), COMPUTER LOGIC, WINDING, COMPUTERS,  
COMPUTER STORAGE DEVICES, USSR

(U)

A SHIFT REGISTER BASED ON MAGNETIC CORES WHICH HAS  
THE DISTINGUISHING FEATURE THAT FOR THE PURPOSE OF  
INCREASING THE RAPIDITY OF ITS WORKING, EXPANSION OF  
THE TEMPERATURE OPERATING RANGE, AND WIDENING OF THE  
TOLERANCES FOR CHANGE IN THE PARAMETERS OF THE PULSES  
OF THE FEED CURRENTS EACH PRIMARY ELEMENT OF THE  
REGISTER CONTAINS TWO MEMORY CORES HAVING ON ONE CORE  
A FEED (MOVEMENT) WINDING AND AN INPUT WINDING  
THAT ARE COUNTER TO EACH OTHER, THE OTHER CORE BEING  
THE STANDARDIZING ONE WITH A SHIFT WINDING JOINED BY  
A LOOP OF CONNECTION WITH THE MEMORY CORES.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 417 9/2 13/7  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
PNEUMATIC LONG-TERM MEMORY CELL FOR DISCRETE  
SIGNALS. (U)  
JAN 67 7P FEDOSEEV, R. YU. I  
GOLOVANOVA, I. O. I  
REPT. NO. FTD-HT-67-13

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
PATENT (USSR) 168 543, APPL. 859097/26-24, 30 SEP  
63.

DESCRIPTORS: (\*COMPUTER STORAGE DEVICES, DATA  
STORAGE SYSTEMS), (\*PNEUMATIC DEVICES, DATA  
STORAGE SYSTEMS), COMPUTERS, DESIGN, SIGNALS,  
RODS, USSR (U)

A BRIEF DESCRIPTION IS GIVEN OF A PNEUMATIC LONG-  
TERM MEMORY CELL FOR DISCRETE SIGNALS WHICH CONTAINS  
TWO PERPENDICULARLY ARRANGED SLAVE MECHANISMS  
CONVERTING PRESSURE INTO SHIFTING AND A LOCK, WHICH  
HAS THE DISTINGUISHING FEATURE THAT, FOR THE PURPOSE  
OF SIMPLIFYING THE DEVICE AND IMPROVING THE  
DEPENDABILITY, THE LOCK IS DESIGNED IN THE FORM OF A  
PROJECTION LOCATED ON A ROD OF THE SLAVE MECHANISM  
AND TWO SLOTS ARRANGED ON THE ROD OF THE OTHER SLAVE  
DEVICE. ENGLISH TRANSLATION. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-650 298 9/2 12/10  
DAVID TAYLOR MODEL BASIN WASHINGTON D C  
A FUNCTION CONTROL UNIT FOR USE WITH THE BUREAU OF  
SHIPS ANALOG-COMPUTER BUSAC, (U)  
MAY 54 22P DAVIS, HENRY B. O. I  
REFT. NO. DTMB-899

UNCLASSIFIED REPORT

DESCRIPTORS: (+FUNCTIONS, CONTROL SYSTEMS),  
(+INPUT-OUTPUT DEVICES, ANALOG COMPUTERS),  
WAVEFORM GENERATORS, MARINE ENGINEERING, SHIP  
HULLS, THEORY, OPERATION (U)

A FUNCTION CONTROL UNIT WAS DESIGNED AS A COMPONENT  
INSTRUMENT OF THE BUREAU OF SHIPS ANALOG COMPUTER  
(BUSAC). IT IS INTENDED FOR USE WITH THE BUSAC  
CURVE FOLLOWER, WHICH PRODUCES A FUNCTION  
REPRESENTING CROSS SECTIONS OF THE SHIP'S HULL. THE  
FUNCTION CONTROL UNIT SERVES TO MODIFY AND SUPPLEMENT  
THIS FUNCTION IN A KNOWN AND CONTROLLABLE MANNER.  
FOR EXAMPLE, IT CAN OPERATE UPON THE INPUT FUNCTION  
TO PRODUCE A WAVEFORM SIMULATING STATIC OR DYNAMIC  
CONDITIONS UNDER VARIOUS DEGREES OF LOADING, HEAVE,  
ROLL, OR PITCH. THIS REPORT DISCUSSES THE DESIGN  
AND PRINCIPLE OF OPERATION OF THE INSTRUMENT, WHICH  
IS KNOWN AS THE TMB TYPE 161-A FUNCTION  
CONTROL UNIT, AND GIVES SCHEMATIC CIRCUIT  
DIAGRAMS, ADJUSTMENT PROCEDURES, AND OPERATING  
INSTRUCTIONS. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-A30 841 9/2  
COLUMN A UNIV DOBBS FERRY N Y HUDSON LABS  
HARDWARE DOCUMENTATION OF AN 8-BUTTON KEYBOARD. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JAN 47 46P AMANN,CHARLES IKLERER,MELVIN  
;  
REPT. NO. TR-127  
CONTACTTE NONR-266(84)

UNCLASSIFIED REPORT

DESCRIPTORS: (\*TYPEWRITERS; \*INPUT-OUTPUT  
DEVICES), COMPUTERS, AUTOMATIC, WIRING  
DIAGRAMS, PROGRAMMING(COMPUTERS), ELECTRONIC  
SWITCHES, ELECTRONIC RELAYS (U)  
IDENTIFIERS: FLEXOWRITERS (U)

IF ONE OF EIGHT BUTTONS IS DEPRESSED THIS DEVICE  
WILL EMIT A SERIAL STRING OF PARALLEL 8-BIT CODES TO  
CAUSE TO SET OF TYPING ACTIONS IN AN INPUT-OUTPUT  
TYPEWRITER TERMINAL. THE 'PROGRAM' FOR EACH BUTTON  
IS WIRED IN AND SEQUENCED BY STEPPING SWITCHES. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-652 682 9/2 17/2  
BALLISTIC RESEARCH LABS ABERDEEN PROVING GROUND MD  
BRLESC I AND II MEMORY CROSSBAR SWITCH, A HIGH SPEED  
DIGITAL COMMUNICATION SYSTEM. (U)  
DESCRIPTIVE NOTES MEMORANDUM REPT.,  
MAR 67 29P KLAIR,G. R. SHERALD,G.  
L. I  
REPT. NO. BRL-MR-1827  
PROJ: RDT/E-1P922801A2R7

UNCLASSIFIED REPORT

DESCRIPTORS: (DATA PROCESSING SYSTEMS, MULTIPLE  
OPERATION), (COMMUNICATION SYSTEMS, DESIGN),  
MICROMINIATURIZATION(ELECTRONICS), TIME  
SHARING, COMPUTER LOGIC, PRINTED CIRCUITS, DATA  
STORAGE SYSTEMS, DIGITAL COMPUTERS (U)  
IDENTIFIERS: BRLESC COMPUTER, MEMORY CROSSBAR;  
MULTIPROCESSING (U)

THE REPORT DESCRIBES THE DESIGN AND CONSTRUCTION OF  
A MICRO CIRCUIT HIGH SPEED DIGITAL COMMUNICATION  
SWITCHING SYSTEM TO BE USED IN A MULTI PROCESSOR  
COMPUTER SYSTEM. INCLUDED ARE APPLICATIONS TO TIME  
SHARING WITH MEMORY PROTECT FEATURES, AND BLOCK  
TRANSFER OF INFORMATION BETWEEN PROCESSORS AND OFF  
LINE EQUIPMENT. A DETAILED DESCRIPTION OF  
OPERATION AND LOGIC IS PRESENTED. (AUTHOR) (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-699 404 9/5 9/2  
TEXAS UNIV AUSTIN DEPT OF ELECTRICAL ENGINEERING  
FILTER DESIGN FOR THE AVERAGE RESPONSE COMPUTER. (U)  
67 11P FLAKE, ROBERT H.  
COX, JEROME R., JR.  
CONTRACT: AF-AFOSR-766-67  
PROJ: AF-4751  
MONITOR: AFOSR 67-1623

UNCLASSIFIED REPORT

AVAILABILITY: PUBLISHED IN 1967 SWIEEECO RECORD  
NF-72 PII-5-1-9 APR 19 1967.

DESCRIPTORS: (\*COMPUTERS, RESPONSE), (\*LOW-PASS FILTERS, PERFORMANCE(ENGINEERING)), DESIGN, SPECIFICATIONS, BIOLOGY, MEDICINE, SAMPLING, INTERPOLATION, CALIBRATION (U)

PERFORMANCE AND DESIGN SPECIFICATIONS FOR FILTERS USED IN THE AVERAGE RESPONSE COMPUTER ARE DISCUSSED. BOTH THE OPTIMUM WIENER FILTER AND THE SIMPLE LOW-PASS R-C FILTER ARE CONSIDERED, AND THEIR RELATIVE PERFORMANCE IS COMPARED FOR THIS SPECIAL BIOMEDICAL COMPUTER APPLICATION. DESIGN CURVES ARE PRESENTED FOR THE R-C FILTER PARAMETERS WHICH MINIMIZE THE ROOT-MEAN-SQUARED ERROR WHEN THIS FILTER IS EMPLOYED IN THE AVERAGE RESPONSE COMPUTER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 046 9/2 9/1  
LABORATORY FOR ELECTRONICS INC BOSTON MASS ELECTRONICS  
DIV  
RESEARCH IN FERROMAGNETICS, PART II. (U)  
DESCRIPTIVE NOTE: FINAL REPT. (ITEM 2); APR 69-MAR  
66.

SEP 67 109P SPAIN,ROBERT J. I  
BATTAREL,CLAUDE P. IJAUVTIS,HARVEY I. I  
MARINO,MICHAEL J. IPEOPLES,PATRICK J. I  
CONTRACT AF 19(628)-4197  
PROJ AF-5632  
TASK 563207  
MONITOR AFCRL 67-0205-REV

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SUPERSEDES AD-655 059, FINAL REPT.  
SEE ALSO PART I, AD-654 681.

DESCRIPTORS: (\*FERROMAGNETIC MATERIALS; FILMS);  
(\*COMPUTER STORAGE DEVICES, FILMS), MAGNETIC  
PROPERTIES, THIN FILM STORAGE DEVICES, SHIFT  
REGISTERS, FEASIBILITY STUDIES, COMPUTER LOGIC;  
LOGIC CIRCUITS  
IDENTIFIERS: THIN FILMS ELECTRONICS (U)

WORK HAS BEEN CARRIED OUT ON ASCERTAINING THE  
FEASIBILITY OF A DTPL PUSH DOWN LIST MEMORY.  
INVESTIGATIONS WERE MADE OF THE BASIC PUDL THIN  
FILM SHIFT REGISTER STRUCTURE AS WELL AS THE  
ASSOCIATED CONDUCTOR PATTERNS. DRIVE AND SENSE  
ELECTRONICS HAVE BEEN DESIGNED AND BREADBOARDED AND A  
NUMBER OF SYSTEM DESIGNS HAVE BEEN STUDIED AND  
EVALUATED. ADDITIONAL WORK IS STILL REQUIRED FOR  
THE OPTIMIZATION OF THE THIN FILM ELEMENTS AND FOR  
THE COMPLETION OF THE FEASIBILITY MODEL.

(AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 121 9/2 1479  
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS  
LAB  
COORDINATE READER AND CARD PUNCH OR TABULATOR, (U)  
SEP 54 19P VANHAAGEN, RICHARD H.  
REPT. NO. CF-2279  
CONTRACT NORD-720.

UNCLASSIFIED REPORT

DESCRIPTORS: (FILM READERS, DATA PROCESSING  
SYSTEMS), OPERATION, MAINTENANCE, PUNCHED  
CARDS (U)

THE EQUIPMENT WAS DESIGNED TO BE USED IN EITHER OF  
TWO MODES AS DICTATED BY THE REQUIREMENTS OF THE  
INFORMATION WHICH IS TO BE TRANSCRIBED. THE FIRST  
MODE IS ONE OF READING RELATIVE VALUES OF COORDINATES  
WHICH ARE RANDOMLY OR OTHERWISE SCATTERED ABOUT, SUCH  
AS PARTICLES IN A FLUID. THE POSITIONS OF THE  
PARTICLES MAY CHANGE AS A FUNCTION OF TIME, AND THE  
SUCCESSIVE READINGS WILL SHOW THEIR BEHAVIOR AND CAN  
BE MATHEMATICALLY ANALYZED. THIS MAY BE RECORDED  
ON A NUMBER OF SUCCESSIVE SINGLE-EXPOSURE FRAMES OF A  
PHOTOGRAPHIC FILM, OR ON ONE FRAME WITH SUCCESSIVE  
EXPOSURES. IN EACH OF THESE CASES BOTH COORDINATE  
VALUES ARE UNKNOWN. IN THE SECOND MODE, READINGS  
ARE MADE AT PRESCRIBED INTERVALS ALONG ONE AXIS, SUCH  
AS IN THE CONVERSION OF STRIP-CHART RECORDS AND  
OSCILLOGRAPH RECORDS TO PUNCHED CARDS, WHERE EQUAL  
STEPS ALONG ONE (USUALLY THE HORIZONTAL) AXIS ARE  
DESIRED; THE POSITION OF THE OTHER COORDINATE BEING  
THE INTERSECTION OF THE FIRST ONE AND THE RECORDED  
TRACE. INITIAL READ-OUT OF CALIBRATION TRACES  
ALLOWS AN INTERPOLATION BY MACHINE CALCULATION WHICH  
PRODUCES LINEARIZED DATA. (U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-658 189 9/2 9/5  
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS MADRID  
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMÁTICA  
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL  
DEVICES. (U)

DESCRIPTIVE NOTE: TECHNICAL NOTE,  
JUL 60 115P SANTESHASES, J. GARCIA I  
REPT. NO. TN-3  
CONTRACT AF 61(514)-1224

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, \*MAGNETIC RESONANCE),  
(+CONTROL SYSTEMS, MAGNETIC RESONANCE),  
(+ELECTRICAL NETWORKS, MAGNETIC RESONANCE),  
BIBLIOGRAPHIES, VARACTOR DIODES, INDUCTANCE,  
COMPUTER LOGIC, INVERTER CIRCUITS, LOGIC  
CIRCUITS, SHIFT REGISTERS, RELAXATION OSCILLATORS (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY GIVEN IN THE  
TWO PREVIOUS TECHNICAL NOTES HAS BEEN EXTENDED UP  
TO SEVENTY NINE PAPERS. IN THIS LIST A NEW GROUP  
OF PAPERS CORRESPONDING TO THE USE OF VARIABLE  
CAPACITANCE DIODES IN NON-LINEAR RESONANT CIRCUITS,  
HAS BEEN MADE UP. CHAPTER 2 DEALS ON THE  
FERRORESONANT CIRCUITS DEVELOPED. SOME NEW SYSTEMS  
TO OBTAIN THE TRANSFER OF INFORMATION BETWEEN  
FERRORESONANT ELEMENTS IN WHICH DEMODULATION OF  
A+C SIGNALS IS NOT NEEDED HAVE BEEN DESCRIBED.  
A CONSEQUENCE IS THE ELIMINATION OF THE CONTROL  
WINDING ON THE INDUCTOR CORES. EACH OF THESE  
SYSTEMS ALLOW ONE TO DEVELOP A SYSTEM OF CIRCUIT  
LOGIC. IN CHAPTER 3, THE WORK PERFORMED ON THE  
VARIABLE CAPACITANCE DIODE NONLINEAR RESONANT CIRCUIT  
(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 193 9/2 9/8  
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS MADRID  
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMÁTICA  
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL  
DEVICES. (U)

DESCRIPTIVE NOTE: RPT. FOR 1 APR 58-31 MAR 59,  
APR 59 184P SANTESHASES, J. GARCIA  
RPT. NO. TN-2  
CONTRACT AF 61(1914)-1234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-656 217 AND AD-658  
189.

DESCRIPTORS: (+COMPUTERS, \*MAGNETIC RESONANCE),  
(+CONTROL SYSTEMS, MAGNETIC RESONANCE),  
(+ELECTRICAL NETWORKS, MAGNETIC RESONANCE),  
RELAXATION OSCILLATORS, MAGNETIC CORE STORAGE,  
LOGIC CIRCUITS, SHIFT REGISTERS, INDUCTANCE,  
COMPUTER LOGIC, DELAY CIRCUITS, MAGNETIC  
PROPERTIES, BIBLIOGRAPHIES (U)

IN CHAPTER 1 THE LIST OF BIBLIOGRAPHY ON  
FERRORESONANCE GIVEN IN TECHNICAL NOTE NO. 1  
HAS BEEN EXTENDED TO SIXTY-FIVE PAPERS. CHAPTER 2  
IS DEVOTED TO THE TESTS CARRIED OUT ON FERRITE  
MATERIALS, THE REDUCTION OF THE SIZE OF CORES, AND  
THE OBTENTION OF SHAPES MORE CONVENIENT FOR USE IN  
FERRORESONANCE AT FREQUENCIES UP TO TEN MEGACYCLES.  
IN CHAPTER 3 THE FERRORESONANT DEVICES ARE  
DESCRIBED. WITH THE SERIES CIRCUIT WITHOUT  
POLARIZATION AS A BASIS, COMPLETE SYSTEMS OF CIRCUIT  
LOGIC HAVE BEEN DEVELOPED. THE DELAY UNIT, THE  
HALF-ADDER, A SERIAL FULL ADDER, AND SOME OTHER  
CIRCUITS WHICH MAKE USE OF THE OPERATING PRINCIPLES  
OF THE DELAY UNIT AND HALF-ADDER, ARE DESCRIBED.  
THE EXPERIMENTAL RESULTS PRESENTED HAVE BEEN  
OBTAINED WITH A CARRIER FREQUENCY OF TWO MEGACYCLES,  
AND PULSE REPETITION RATES RANGING BETWEEN 200,000  
AND 200,000 PULSES PER SECOND. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-688 217 9/2 9/5  
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS MADRID  
(SPAIN) INSTITUTO DE ELECTRICIDAD Y AUTOMATICA  
RESEARCH ON FERRORESONANT COMPUTER AND CONTROL  
DEVICES. (U)  
DESCRIPTIVE NOTE: TECHNICAL NOTE NO. 1, 1 APR 97-31  
MAR 58.  
MAR 58 160P SANTESMASES, J. GARCIA I  
CONTRACT: AF 6119141-1234

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-688 190 AND AD-688  
189.

DESCRIPTORS: (\*COMPUTERS, \*MAGNETIC RESONANCE),  
(\*CONTROL SYSTEMS, MAGNETIC RESONANCE),  
(\*ELECTRICAL NETWORKS, MAGNETIC RESONANCE),  
BIBLIOGRAPHIES, RELAXATION OSCILLATORS,  
INDUCTANCE, LOGIC CIRCUITS, MAGNETIC CORE  
STORAGE, WIRING DIAGRAMS, MATHEMATICAL ANALYSIS,  
MAGNETIC PROPERTIES (U)

IN CHAPTER 1, A LIST IS GIVEN OF FIFTY NINE  
PUBLICATIONS, WHICH DEAL WITH THE FERRORESONANCE  
PHENOMENON AND ITS APPLICATION TO CIRCUITS USED IN  
COMPUTERS. THE INFORMATION FOUND IN THEM WAS  
CLASSIFIED INTO THREE GROUPS, NAMELY, FERRORESONANT  
CIRCUIT ANALYSIS, FERRORESONANT FLIP-FLOP ANALYSIS,  
AND EXPERIMENTAL FERRORESONANT CIRCUITS FOR  
APPLICATION TO COMPUTERS. CHAPTER 2 IS INTENDED TO  
ESTABLISH A FIGURE OF MERIT FOR MAGNETIC MATERIALS,  
WITH RELATION TO FERRORESONANCE. FOR THIS PURPOSE,  
CHARACTERISTICS WERE FIRST DETERMINED FOR THE SMALL-  
SIZE CORES AVAILABLE, WORKING THEN IN TERMS OF  
REDUCED CHARACTERISTICS WHICH ARE INDEPENDENT ON CORE  
SIZE AND NUMBER OF TURNS. FINALLY, A NEW FIGURE OF  
MERIT IS INTRODUCED, FROM CERTAIN CONSIDERATIONS ON  
THE PHENOMENON OF FERRORESONANCE. IN CHAPTER 3,  
WE GIVE SOME ORIGINAL RULES FOR TWO-BRANCH FLIP-FLOP  
DESIGN, WORKING FROM DATA WHICH ARE EASILY OBTAINED  
IN THE LABORATORY. ACCOUNT IS ALSO GIVEN OF  
EXPERIMENTAL RESULTS OBTAINED ON TWO-BRANCH, NO-  
POLARIZATION FLIP-FLOPS, AND FOUR-BRANCH RING  
COUNTERS, OPERATING UNDER A SINGLE PULSE SEQUENCE.  
IN ADDITION, A STUDY IS DEVELOPED OF THE ONE-BRANCH  
FLIP-FLOP, WITH POLARIZATION, WORKING UNDER TWO PULSE  
SEQUENCES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 379 9/2  
JOHNS HOPKINS UNIV SILVER SPRING MD APPLIED PHYSICS  
LAB  
A DIRECT BINARY DIVIDER FOR SPECIAL PURPOSE DIGITAL  
COMPUTERS. (U)  
JAN 61 1SP ZINK, H. D. I  
REPT. NO. CF-2916  
CONTRACT: NORD-7386

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIGITAL COMPUTERS, BINARY  
ARITHMETIC), (\*COMPUTER LOGIC, \*BINARY  
ARITHMETIC), NUMERICAL METHODS AND PROCEDURES,  
SHIFT REGISTERS, REAL TIME, ITERATIVE METHODS (U)  
IDENTIFIERS: ON-LINE SYSTEMS (U)

THE REPORT DESCRIBES THE DIVIDER CIRCUIT DEVELOPED  
IN AN ATTEMPT TO SOLVE THE PROBLEM OF DIVIDING  
WITHOUT USING ITERATIVE TECHNIQUES AND WITHOUT UNDULY  
SLOWING DOWN THE COMPUTATION PROCESS OF A DIGITAL  
COMPUTER. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-658 727 9/2 20/11  
COLUMBIA UNIV NEW YORK DEPT OF MECHANICAL  
ENGINEERING  
THREE-DIMENSIONAL ELASTICITY THEORY FOR FLAT-PLATE  
MEMORY ELEMENTS SUBJECTED TO SPACE-VARIABLE NORMAL  
TRACTION.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.,  
JUL 67 69P ELROD, H. G. 15000.DES R.

REPT. NO. TR-9  
CONTRACT: NONR-4259(14)  
PROJ: NR-062-360

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: REPT. ON PROJ. MECHANICAL AND  
FLUID DYNAMICAL ASPECTS OF PROBLEMS ASSOCIATED  
WITH COMPUTER TECHNOLOGY: TASK 1, TAPE TRANSPORT.  
SEE ALSO AD-802 009.

DESCRIPTORS: (+COMPUTER STORAGE DEVICES,  
\*ELASTICITY), BOUNDARY VALUE PROBLEMS, DIGITAL  
COMPUTERS, STRESSES, STRAIN(MECHANICS), FLAT  
PLATE MODELS, BENDING, MATHEMATICAL ANALYSIS (U)

MANY OF THE CONTEMPORARY MEMORY ELEMENTS USED IN  
HIGH-SPEED DIGITAL COMPUTERS ARE FLAT IN THE  
UNSTRESSED STATE. THE PRESENT WORK IS PART OF A  
REVIEW AND ENLARGEMENT OF APPLICABLE ELASTICITY  
THEORY IN CASES OF SMALL DEFORMATION WITH SPACE-  
VARIABLE NORMAL TRACTION OR PRESSURE. (1) ALL  
FLAT PLATE RESULTS ARE DERIVED DIRECTLY WITH THREE-  
DIMENSIONAL LINEAR ELASTICITY THEORY \* NONE OF THE  
CONVENTIONAL INTERMEDIATE ASSUMPTIONS BEING EMPLOYED.  
(2) WITHIN THE EXACT THEORY, CERTAIN AUXILIARY  
FUNCTIONS ARE SHOWN TO SATISFY CONVENTIONAL THIN-  
PLATE DIFFERENTIAL EQUATIONS. IN TERMS OF THESE  
FUNCTIONS, DISPLACEMENTS, STRESSES, STRESS RESULTANTS  
AND COUPLES ARE SIMPLY EXPRESSED BY FORMULAS WHICH  
ARE EITHER EXACT, OR ASYMPTOTICALLY ACCURATE.  
BOUNDRY CONDITIONS ARE MATHEMATICALLY EQUIVALENT  
TO THOSE OF MICHELL PLATE THEORY. (3)  
SOLUTIONS OBTAINED FROM THE PRESENT THEORY ARE  
'INTERIOR SOLUTIONS' IN THE SENSE OF FRIEDRICH'S AND  
DRESSLER (4) AND ACCOMMODATE KIRCHHOFF EDGE  
CONDITIONS. THEIR USE WITH MORE GENERAL EDGE  
CONDITIONS WILL BE THE SUBJECT OF A LATER REPORT.  
(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-659 264 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
USING AN APM-1 PRINTER AT THE COMPUTER OUTPUT. (U)  
MAR 67 10P KHODAKOV, V. E. ;  
REPT. NO. FTD-HT-66-492  
MONITOR: TT 67-62988

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
AVTOMATIKA I Priborostroenie (USSR) N2 P21-2 1965.  
PRIMENENIE PECHATAYUSHCHEI MASHINKI APM-1 V  
USTROISTVAKH VYVODA VYCHISLITELNYKH MASHIN.

DESCRIPTORS: (\*INPUT-OUTPUT DEVICES,  
COMPUTERS), (\*PRINTING, COMPUTERS),  
ELECTROSTATICS, CONTROL SYSTEMS, COMPUTER LOGIC,  
PERFORMANCE(ENGINEERING) (U)

THE DEVELOPMENT AND TEST RESULTS OF THE FIRST  
SOVIET ON-THE-FLY PRINTER APM-1 ARE REPORTED.  
THE HIGH-SPEED LINE PRINTER USES A CONTINUOUSLY  
ROTATING PRINT WHEEL CARRYING 24 CHARACTERS; THEY ARE  
SELECTED BY A 5-DIGIT BINARY CODE. FAST-ACTING  
HAMMERS PRINT THE CHARACTERS. THE PRINTER IS  
CONNECTED TO THE COMPUTER VIA A CONTROL UNIT WHICH  
COMPRISES FERRITE-DIODE LOGICAL ELEMENTS AND  
SEMICONDUCTOR AMPLIFIERS. FUNCTIONAL AND PRINCIPAL  
CIRCUITS OF THIS UNIT ARE PRESENTED AND THEIR  
OPERATION IS BRIEFLY EXPLAINED. DURING THE TWO-  
YEAR OPERATION OF AN APM-1 ON-THE-FLY PRINTER  
PROTOTYPE, NO FAILURE OF A MAJOR COMPONENT OCCURRED. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-660 730 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
PUNCHED-TAPE DATA INPUT UNIT WITH CIRCUITAL  
CONVERSION OF NUMBERS. (U)  
APR 67 IPP MAKHMUDOV, YU. A. ISBEKIR+  
ZADE, N. B. I  
REPT. NO. FTD-HT-66-795

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
VOPROSY VYCHISLITENI MATEMATIKI I TEKHNIKI (USSR)  
V3 P161-70 1969.

DESCRIPTORS: (+INPUT-OUTPUT DEVICES, \*PUNCHED  
TAPE), COMPUTER STORAGE DEVICES, SPECIAL PURPOSE  
COMPUTERS, USSR (U)

THE ARTICLE DESCRIBES AN INPUT DEVICE DEVELOPED FOR  
ENTERING INFORMATION FROM PUNCHED TAPE IN THE WORKING  
STORAGE OF A SPECIAL-PURPOSE COMPUTER AND PROVIDING  
CIRCUIT DECIMAL-TO-BINARY CONVERSION. THE DEVICE  
EMPLOYS SERIES-PRODUCED FERRITE-DIODE MAGNETIC  
ELEMENTS. NUMBERS ARE RECORDED ON THE PUNCHED TAPE  
IN THE CODE OF THE ST-39 APPARATUS. THE  
CONVERSION SCHEME IS BASED ON AN ALGORITHM USING A  
TABLE OF CONSTANTS. THE CONVERSION REPRESENTS THE  
SERIAL ADDITION OF MULTIPLE CONSTANTS. THERE IS AN  
INTERMEDIATE CONVERTER FROM THE ST-39 CODE TO  
BINARY DECIMAL CODE. THE ARTICLE GIVES A BLOCK  
DIAGRAM OF THE INPUT DEVICE, AS WELL AS A DETAILED  
DESCRIPTION OF ITS BASIC CIRCUIT. THE CIRCUIT  
SPEED PERMITS THE ENTRY OF 1,000 BITS (ROWS) PER  
SECOND, WHICH MAKES IT POSSIBLE TO USE IT WITH THE  
PHOTOELECTRIC METHOD OF PUNCHED TAPE READING. 196  
ELEMENTS ARE USED TO CONSTRUCT THE DEVICE, INCLUDING  
64 LOGICAL AND 92 SIMPLE ELEMENTS. (AUTHOR) (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-660 792 9/2

OREGON STATE UNIV CORVALLIS COMPUTER CENTER  
EVALUATION OF THREE CONTENT-ADDRESSABLE MEMORY  
SYSTEMS USING GLASS DELAY LINES.

(U)

DESCRIPTIVE NOTE: DOCUMENT,

JUL 67 71P RUX, PETER T. I

REPT. NO. C-67-9

CONTRACT: NONR-1266(11)

UNCLASSIFIED REPORT

DESCRIPTORS: (\*COMPUTER STORAGE DEVICES, DELAY  
LINES), GLASS, DIGITAL COMPUTERS, COMPUTER  
LOGIC, PERFORMANCE(ENGINEERING) (U)

EVALUATION IS MADE OF THREE CONTENT-ADDRESSABLE  
(ASSOCIATIVE) DIGITAL MEMORY SYSTEM ORGANIZATIONS  
USING A CIRCULATING MEMORY. SPECIFIC REFERENCE IS  
MADE TO GLASS DELAY-LINE MEMORIES SINCE THEY OFFER  
THE BEST SOLUTION TO HIGH-SPEED CIRCULATING STORAGE.  
THE MEMORY DESIGNS ARE EACH DEVELOPED AS A POSSIBLE  
MEMORY ADDITION TO THE NEBULA COMPUTER AT OREGON  
STATE UNIVERSITY. A USEFUL COMMAND SET IS  
ESTABLISHED ALONG WITH A DISCUSSION OF APPLICATIONS  
OF SUCH A MEMORY SYSTEM. THEN THE THREE SEPARATE  
DATA ORGANIZATIONS ARE EXPLAINED AND THE LOGICAL  
DESIGN AND HARDWARE REQUIREMENTS FOR EACH SYSTEM TYPE  
ARE DETAILED AND COMPARED. A CIRCULATING MEMORY IS  
UTILIZED BECAUSE IT ALLOWS VERY INEXPENSIVE  
IMPLEMENTATION OF CONTENT-ADDRESSING CAPABILITY.

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UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 000596

AD-660 847 9/2 9/5  
MELPAR INC FALLS CHURCH VA  
DEVELOPMENT OF AN INPUT/OUTPUT TECHNIQUE FOR  
INTEGRATED CIRCUIT SIMULATION COMPUTERS. (U)  
DESCRIPTIVE NOTE: FINAL REPT. JAN-DEC 66,  
JUL 67 67P MCNEAL,RICHARD N. S  
CONTRACT. AF 33(615)-2449  
PROJ: AF-6114  
TASK: 611408  
MONITOR: AMRL TR-67-74

UNCLASSIFIED REPORT

DESCRIPTORS: (+INPUT-OUTPUT DEVICES,  
COMPUTERS), (+SIMULATION, COMPUTERS),  
(+INTEGRATED CIRCUITS, COMPUTERS),  
SERVOMECHANISMS, MODULATORS, ANALOG SYSTEMS,  
LOGIC CIRCUITS, SHIFT REGISTERS,  
PERFORMANCE(ENGINEERING), ANALOG-TO-DIGITAL  
CONVERTERS, DIGITAL-TO-ANALOG CONVERTERS, COMPUTER  
LOGIC (U)

AN INPUT/OUTPUT TECHNIQUE WAS DEVELOPED TO  
INTERFACE BETWEEN INTEGRATED CIRCUIT COMPUTERS AND  
SIMULATION SYSTEMS. FOUR GENERAL TYPES OF SIGNALS  
ARE PROCESSED BY THIS INPUT/OUTPUT SYSTEM:  
DISCRETE INPUTS, DISCRETE OUTPUTS, ANALOG INPUTS,  
AND ANALOG OUTPUTS. THIS STUDY HAS DETERMINED THAT  
INTEGRATED CIRCUITS ARE READILY ADAPTABLE TO  
PERFORMING THE DIGITAL FUNCTIONS IN THE INPUT/OUTPUT  
SYSTEM, BUT THE ANALOG SIGNAL CONVERSION REQUIREMENTS  
OF THESE SYSTEMS ARE NOT WITHIN PRESENT LINEAR  
INTEGRATED CIRCUIT CAPABILITIES. IT IS ANTICIPATED  
THAT THE LINEAR INTEGRATED CIRCUIT DEVELOPMENT WILL  
HAVE PROGRESSED TO THE POINT OF MAKING INTEGRATED  
CIRCUIT CONVERTERS FEASIBLE WITHIN THE NEXT YEAR.  
THE BASIC SYSTEM REQUIREMENTS AND THE OVERALL  
SYSTEM REQUIREMENTS AND THE OVERALL SYSTEM DESIGN  
TECHNIQUE FOR AN INPUT/OUTPUT SYSTEM ARE DISCUSSED IN  
DETAIL. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 361 9/2  
HONEYWELL INC MINNEAPOLIS MINN SYSTEMS AND RESEARCH  
CENTER  
ASSOCIATIVE TECHNIQUES FOR CONTROL FUNCTIONS IN A  
MULTI-PROCESSOR SIMULATION INVESTIGATION. (U)  
DESCRIPTIVE NOTE: FINAL REPT. JAN-AUG 67,  
NOV 67 147P GONZALES,R. & UNDERSON,D.  
C. TIMMONS,J. A. I  
REPT. NO. 12039-FR1  
CONTRACT: F30602-67-C-0179  
PROJ: AF-5581  
TASK: 558109  
MONITOR: RADC TR-67-800

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DATA STORAGE SYSTEMS, CONTROL),  
(\*DATA PROCESSING SYSTEMS, DESIGN), COMPUTER  
PROGRAMS, SUBROUTINES,  
PERFORMANCE(ENGINEERING), SIMULATION (U)  
IDENTIFIERS: MULTIPROCESSING, ASSOCIATIVE MEMORY,  
ASSOCIATIVE PROCESSOR (U)

A SIMULATOR OF A 'MULTIPROCESSOR WITH ASSOCIATIVE  
CONTROL' WAS DEVELOPED FOR PURPOSES OF EVALUATING AND  
STUDYING THE USE OF ASSOCIATIVE MEMORIES FOR  
EXECUTIVE CONTROL FUNCTIONS IN MULTIPROCESSORS. A  
JOB GENERATOR HAS ALSO DEVELOPED TO PROVIDE A SOURCE  
OF JOBS TO USE IN THE SIMULATION STUDIES. SOME  
PRELIMINARY RESULTS WERE OBTAINED IN TERMS OF SYSTEM  
EFFICIENCY AND REQUIREMENTS ON THE ASSOCIATIVE  
MEMORIES. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 762 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
INPUT AND OUTPUT DEVICES FOR ELECTRONIC  
COMPUTERS,

JUL 67 8P BONDAREV, A. M. 3  
REPT. NO. FTD-HT-23-842-67

(U)

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
STANDARTIZATSIIA (USSR) N2 P44-5 1964.

DESCRIPTORS: (+INPUT-OUTPUT DEVICES;  
COMPUTERS), PUNCHED CARDS, PUNCHED TAPE,  
STANDARDS, USSR

(U)

A NEW STANDARD IS EXTENDED HERE TO PUNCH-CARD AND  
PUNCH-TAPE INPUT AND OUTPUT DEVICES FOR GENERAL-  
PURPOSE ELECTRONIC COMPUTERS. THE NOTATION,  
NOMENCLATURE AND CHARACTERISTICS OF THESE DEVICES ARE  
SPECIFIED, AS ARE THEIR PRINCIPAL PARAMETERS;  
TECHNICAL RATE OF LOADING AND EXTRACTION OF  
INFORMATION IN START-STOP AND CONTINUOUS REGIMES;  
CAPACITY OF THE LOADING MAGAZINE AND RECEIVING POCKET  
FOR THE CARDS; TECHNICAL RATE OF PRINT-OUT FOR  
SEQUENTIAL ALPHANUMERIC PRINTING, LINE-PARALLEL  
ALPHANUMERIC PRINTING, AND LINE-PARALLEL DIGITAL  
PRINTING. RULES ARE GIVEN FOR THE NUMBER OF DIGITS  
IN A LINE, THE SPACING OF PRINT, AND CERTAIN OTHER  
PRINT-OUT PARAMETERS. THE GOST (ALL-UNION  
STATE STANDARD) 10525-62 ALSO SPECIFIES THE  
DIGITS AND SIGNS WHICH SHOULD BE USED IN INPUT AND  
OUTPUT DEVICES, ON LEAVING TO CUSTOMERS THE RIGHT TO  
SET UP THEIR OWN COMBINATIONS OF THE SPECIFIED  
SYMBOLS AND INTRODUCE NEW SIGNS. THE PURPOSE OF  
THIS STANDARD IS TO ESTABLISH THE UNIFICATION AND  
INTERCHANGEABILITY OF INPUT AND OUTPUT DEVICES.  
STANDARDS FOR 'ALPHANUMERIC CODES FOR PUNCH  
CARDS AND PUNCH TAPES AND PERFORATED TAPES,  
THE SHAPES, BASIC PARAMETERS, SIZES AND  
POSITIONS OF HOLES ON A PUNCH TAPE,' HAVE  
BEEN DRAFTED AND APPROVED.

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 792 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
COMPUTERS WITH CORE-DIODE ELEMENTS. (U)  
JUN 67 14P MAKHMUDOV, YU. A. I  
REPT. NO. FTD-HT-67-48

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED TRANS. OF AKADEMIYA NAUK  
AZERBAIDZHANSKOI SSR, BAKU, IZVESTIYA, SERIYA  
FIZIKO-TEKHNICHESKIKH I MATEMATICHESKIKH NAUK, N6  
P27-25 1964.

DESCRIPTORS: (MAGNETIC CORE STORAGE, DIGITAL  
COMPUTERS), LOGIC CIRCUITS, COMPUTER STORAGE  
DEVICES, MAGNETIC RECORDING SYSTEMS, VERY LOW  
FREQUENCY, USSR (U)

THE AUTHOR DESCRIBES A DIGITAL COMPUTER DEVELOPED  
AT THE COMPUTATION CENTER OF THE AZERBAYDZHAN  
ACADEMY OF SCIENCES, USING SEQUENTIAL AND IN SOME  
CASES PARALLEL-SEQUENTIAL UNITS. THE COMPUTER  
EMPLOYS COMMERCIALLY PRODUCED FERRITE-DIODE ELEMENTS;  
OPERATING AT A LOW TIMING FREQUENCY (70 KCS).  
THE ARTICLE DESCRIBES THE PRINCIPLES UNDERLYING  
INDIVIDUAL UNITS OF THE COMPUTER, WHICH CAN BE USED  
EITHER INDEPENDENTLY OR AS PARTS OF OTHER COMPUTER  
SYSTEMS. ALL THE COMPUTER UNITS OPERATE WITH 24-  
DIGIT BINARY NUMBERS (INCLUDING THE SIGN DIGIT)  
WITH FIXED RADIX. THE UNITS DESCRIBED ARE A  
UNIVERSAL ARITHMETIC UNIT OF SEQUENTIAL ACTION, THE  
INFORMATION INPUT UNIT, THE EXTERNAL MAGNETIC-TAPE  
MEMORY, AND THE OUTPUT UNIT. THE COMPUTER EMPLOYS  
A TOTAL OF 88 SIMPLE AND 90 LOGIC ELEMENTS. (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 828 9/2 52/1  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
MATRIX COMPUTER FOR CALCULATING CORRELATION  
FUNCTIONS. (U)  
JUL 67 14P ULIN,O. V. IPETUNIN,V.  
K. I  
REPT. NO. FTD-HT-22-820-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTES UNEDITED ROUGH DRAFT TRANS. OF  
AVTOMATICHESKII KONTROL I ELEKTRICHESKIE IZMERENIYA  
(USSR) V2 P70-82 1964.

DESCRIPTORS: (+STATISTICAL FUNCTIONS, PROBLEM  
SOLVING), (+DATA PROCESSING SYSTEMS, STATISTICAL  
FUNCTIONS), APPROXIMATION(MATHEMATICS),  
MAGNETIC CORE STORAGE, AMPLIFIERS, CORRELATORS;  
USSR (U)

A SEMI-AUTOMATIC CORRELATOR THAT USES A MATRIX  
NETWORK FOR THE MULTIPLICATION OPERATION IS  
DESCRIBED. THE SOURCE DATA IN THE FORM OF A  
NUMERICAL TABLE IS INSERTED INTO THE CORRELATOR BY A  
KEYBOARD DEVICE. THE CORRELATOR INCLUDES A  
MULTIPLICATION MATRIX DESIGNED WITH SQUARE-LOOP  
FERRITES, TRANSISTORIZED BLOCK GENERATORS AND  
AMPLIFIERS, AND ALSO FERRITE-DIODE REGISTERS WITH A  
COMPENSATING CORE IN EACH CELL. A BLOCK DIAGRAM  
AND A PRINCIPAL CIRCUIT OF THE CORRELATOR ARE  
PRESENTED, AND ITS OPERATION IS DESCRIBED. THE  
MAXIMUM RELATIVE ERROR DEPENDS ON THE NUMBER OF  
DISCRETE LEVELS IN THE MULTIPLICATION MATRIX. THE  
CORRELATOR SPEED OF OPERATION IS DETERMINED BY THE  
PRODUCT READ TIME; AVERAGE TIME OF ONE READING IS  
0.1-0.15 SEC. (U)

UNCLASSIFIED

UDC REPO BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-663 603 9/2  
MELLON INST PITTSBURGH PA  
FELLOWSHIP ON COMPUTER COMPONENTS NO. 247. (U)  
DESCRIPTIVE NOTE: QUARTERLY REPT. NO. 6, 11 JAN-10 APR  
92.  
APR 92 93P BOWMAN,J. R. & SCHWERTZ,F.  
A. SMILCH,A. MOFFAT,B. STEINBACK,R. T. I

CONTRACT AF 19(122)-276

UNCLASSIFIED REPORT

DESCRIPTORS: (+COMPUTERS, SCIENTIFIC RESEARCH);  
ELECTRONIC SWITCHES, SILICON CARBIDES, SHEETS,  
RUBBER, BONDING, NONLINEAR SYSTEMS, CRYSTAL  
RECTIFIERS, LIGHT PULSES, DIGITAL SYSTEMS,  
COMPUTER STORAGE DEVICES, OPTICAL EQUIPMENT,  
CIRCUITS, ELECTROLUMINESCENCE, PHOSPHORESCENT  
MATERIALS (U)

THE STORY OF THE SILICON CARBIDE FUNCTION SWITCH  
AND FUNCTION SWITCH BLANKS IS RELATED IN SECTION  
I OF THE REPORT. THE SECTION, ENTITLED  
'NONLINEAR SWITCHING ELEMENTS', DEMONSTRATES  
THAT THE ASYMMETRIC RESISTANCE CHARACTERISTICS OF  
DIODE RECTIFIERS ARE NOT ESSENTIAL TO THEIR  
APPLICATION AS SWITCHING ELEMENTS. AND THAT ANY TWO-  
TERMINAL PASSIVE NETWORK POSSESSING A SUITABLE  
SYMMETRIC, NONLINEAR, VOLTAGE-CURRENT CHARACTERISTIC  
CURVE MAY BE EMPLOYED AS A SWITCHING ELEMENT.  
SECTION V ON THE 'MORPHOLOGY OF ELECTRONIC  
CIRCUITS' COMPRIMES A DISCUSSION OF THE POSSIBILITY  
OF USING FLAT SHEETS OF PASSIVE AND ACTIVE ELEMENTS  
IN THE FABRICATION OF ELECTRONIC CIRCUITS. SECTION  
II ENTITLED 'OPTICAL ELEMENTS FOR COMPUTERS'  
SUMMARIZES CERTAIN ADVANTAGES TO BE GAINED BY  
EMPLOYING LIGHT PULSES RATHER THAN ELECTRICAL PULSES  
FOR THE HANDLING OF DIGITAL INFORMATION. EFFORTS  
ARE UNDERWAY TO PRODUCE BISTABLE OPTICAL ELEMENTS FOR  
THE STORAGE OF DIGITAL INFORMATION. SECTION III  
IS A FIRST REPORT ON ACTIVITIES POINTED IN THIS  
DIRECTION. SECTION IV DEALS WITH THE DESIGN AND  
CONSTRUCTION OF A CODED-DECIMAL MULTIPLIER AND, MORE  
GENERALLY, WITH A TECHNIQUE FOR THE STORAGE OF A  
FUNCTION OF TWO VARIABLES. SECTION VI CONTAINS  
SOME DATA ON THE SPECTRAL DISTRIBUTION OF THE LIGHT  
EMITTED BY AN ELECTROLUMINESCENT PHOSPHOR.

(AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-662 916

9/2

FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
DEVICE FOR READING AND PRINTING ALPHABET DIGITAL  
INFORMATION FROM PERFORATION CARDS (USP-1).

(U)

AUG 67 1PP SHURMAN, YA. P.

REPT. NO. FTO-HT-66-582

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
NAUCHNO-TEKHNICHESKAYA INFORMATSIYA (USSR) NI P29-21  
1965.

DESCRIPTORS: (+PUNCHED CARDS, +DATA PROCESSING  
SYSTEMS), COMPUTERS, DIODES(SEMICONDUCTOR),  
FERRITES, PROGRAMMING(COMPUTERS), INPUT-  
OUTPUT DEVICES, PRINTING, TYPEWRITERS, CONTROL  
SYSTEMS, RUSSIAN LANGUAGE, SYMBOLS, NUMBERS,

(U)

USSR  
IDENTIFIERS: ALPHA-NUMERIC SYMBOLS

(U)

THE USP-1 MACHINE FOR READING ALPHANUMERIC  
INFORMATION FROM PUNCHED CARDS AND PRINTING DECODED  
INFORMATION ON PRINTER ROLLS IS DESCRIBED. CODE  
FORMS, COMPATIBLE WITH THOSE USED FOR THE URAL-4  
COMPUTER ARE SHOWN IN A TABLE. ABOUT 200 STANDARD  
FERRITE-DIODE MODULES ARE USED IN THE READER-PRINTER  
CONTROL SYSTEM CONSTRUCTION. THE FOLLOWING  
FUNCTIONS ARE PERFORMED BY THE DEVICE: (1)  
AUTOMATIC FEEDING AND RELAY OF PUNCHED CARDS, (2)  
PRINTING OF ALPHANUMERIC TEXT, (3) RESETING OF  
INFORMATION REGISTERS AND TYPEWRITER CARRIAGE RETURN;  
AS DESIGNATED BY THE PROPER CONTROL CODES ON PUNCHED  
CARDS. OTHERWISE, CARRIAGE RETURN IS CAUSED BY  
PRINTING IN THE RIGHT-MOST FIELD OF THE TYPEWRITER  
PAPER ROLL. RELIABILITY CONTROLS ARE INSTALLED TO  
STOP PRINTING AND READING IN CASE OF CERTAIN  
MALFUNCTIONS. THE DEVICE IS CAPABLE OF HANDLING  
BOTH RUSSIAN AND LATIN TEXT CHARACTERS, PLUS  
SELECTED GREEK LETTERS, ARABIC AND ROMAN  
NUMERALS, PUNCTUATION MARKS, ARITHMETIC AND OTHER  
SYMBOLS, FOR A TOTAL OF 86 CHARACTERS IN ALL. THE  
SAME CHARACTER DICTIONARY IS USED IN BOTH INPUT AND  
OUTPUT MODES. PRINTER SPEED IS 10 CHARACTERS PER  
SECOND. THE TYPEWRITER PAPER ROLL IS 170  
CHARACTERS WIDE, AND THE TOTAL LENGTH OF THE ROLL IS  
90 METERS. A BLOCK DIAGRAM OF THE FUNCTIONAL UNITS  
OF THE DEVICE IS GIVEN. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00396

AD-664 224 972  
ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE  
QUARTERLY TECHNICAL PROGRESS REPORT, JANUARY,  
FEBRUARY, MARCH, 1967. (U)  
67 296P  
REPT. NO. COO-1469-0071

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-621 991.

DESCRIPTORS: (COMPUTERS, SCIENTIFIC RESEARCH),  
ELECTROOPTICS, PHOTOCONDUCTIVITY, CODING,  
ELECTROLUMINESCENCE, ANALOG SYSTEMS, INTEGRAL  
TRANSFORMS, TIME SHARING, INPUT-OUTPUT DEVICES,  
SUBROUTINES, REMOTE CONTROL SYSTEMS, NUMERICAL  
ANALYSIS, PROGRAMMING(COMPUTERS), LINEAR  
PROGRAMMING, PROGRAMMING LANGUAGES, COMPUTER  
LOGIC, FAILURE(ELECTRONICS), MAINTENANCE  
IDENTIFIERS: LIGHT PENS, ILLIAC COMPUTER (U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE  
SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH  
PROGRAMS ILLIAC IV; NUMERICAL METHODS, COMPUTER  
ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL  
PHYSICS; SWITCHING THEORY AND LOGICAL DESIGNS;  
ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENTS;  
IBM 7094/1401 SERVICE, USE, AND PROGRAM  
DEVELOPMENTS; PROBLEM SPECIFICATIONS; GENERAL  
LABORATORY INFORMATION. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-664 228 9/2  
ILLINOIS UNIV URBANA DEPT OF COMPUTER SCIENCE  
QUARTERLY TECHNICAL PROGRESS REPORT, APRIL, MAY,  
JUNE, 1967. (U)  
67 296P  
REPT. NO. COO-1469-0072

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: SEE ALSO AD-664 224.

DESCRIPTORS: (COMPUTERS, SCIENTIFIC RESEARCH),  
PHOTOCOCONDUCTIVITY, EXCITATION, LIGHT PULSES,  
CODING, GRAPHICS, PROGRAMMING LANGUAGES, TIME  
SHARING, DIGITAL COMPUTERS, INPUT-OUTPUT DEVICES,  
SUBROUTINES, SYNTAX, DATA STORAGE SYSTEMS,  
NUMERICAL ANALYSIS, SYMBOLS, COMPUTER LOGIC,  
PROGRAMMING(COMPUTERS), MAINTENANCE  
IDENTIFIERS: ILLIAC COMPUTER (U)

CONTENTS: CIRCUIT RESEARCH PROGRAM; HARDWARE  
SYSTEMS RESEARCH; SOFTWARE SYSTEMS RESEARCH  
PROGRAMS: ILLIAC I; NUMERICAL METHODS, COMPUTER  
ARITHMETIC AND ARTIFICIAL LANGUAGES; COMPUTATIONAL  
PHYSICS; SWITCHING THEORY AND LOGICAL DESIGN;  
ILLIAC II SERVICE, USE, AND PROGRAM DEVELOPMENT;  
IBM 7094/1401 SERVICE, USE, AND PROGRAM  
DEVELOPMENT; PROBLEM SPECIFICATIONS; GENERAL  
LABORATORY INFORMATION. (U)

UNCLASSIFIED

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-666 152 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
A PUNCHED CARD READER, (U)  
(CT 67 10P BUBEL,V. M. ;  
KOSOBUTSKI, S. K. ;  
REPT. NO. FTD-MT-24-287-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MONO.  
USTROISTVO VVODA S PERFOKART, MINSK, 1965 P159-  
63.

DESCRIPTORS: (\*PUNCHED CARDS, \*READING  
MACHINES), DIGITAL COMPUTERS, INPUT-OUTPUT  
DEVICES, RELIABILITY(ELECTRONICS), TESTS,

USSR

(U)

IDENTIFIERS: TRANSLATIONS (U)

THIS PAPER DEALS WITH A NEW TYPE OF ON-LINE PUNCHED  
CARD READER DESIGNED TO FEED DATA INTO THE PUNCHED  
TAPE INPUT TERMINAL OF THE MINSK-1 COMPUTER. THE  
CARD READER EXTENDS THE CAPABILITY OF THIS COMPUTER  
BY PROVIDING AN ADDITIONAL MEANS OF INPUT.  
STANDARD 45-COLUMN CARDS ARE USED AT A SPEED OF 100  
CARDS PER MINUTE. THE INFORMATION IS READ IN A  
SERIES-PARALLEL MODE. AN INTERNAL DECODER CONVERTS  
THE DECIMAL DATA INTO 8-4-2-1 BCD CODE, COMPATIBLE  
WITH THE PARTICULAR INPUT TERMINAL OF THE COMPUTER.  
THE COMPUTER GENERATES APPROPRIATE CONTROL SIGNALS  
UTILIZED IN THE CONTROL MODULE OF THE READER. A  
SIGNAL IS FED INTO THE COMPUTER WHENEVER A WORD  
BEGINS OR ENDS. FOR THE SERIAL OUTPUT OF THE  
DIGITS, A SHIFT REGISTER IS USED CONSISTING OF  
TRANSISTOR-FERRITE CORE ELEMENTS. A LABORATORY  
MODEL WAS BUILT AND TESTED WITH SATISFACTORY RESULTS.  
THE UNIT IS SMALL, SIMPLE, AND RELIABLE.

(AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-667 750 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
REGISTER ON UNITRONS. (U)  
SEP 67 10P KARMAZINSKII, A. N.  
KHEIFETS, A. SH., MALIN, B. V., ISONIN, M. S.  
REPT. NO. FTD-HT-23-706-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF  
POLUPROVODNIKOVYE PRIBORY I IH PRIMENENIE:  
SBORNIK STATEI (USSR) N14 P196-210 1965.

DESCRIPTORS: (+SHIFT REGISTERS, USSR), FIELD  
EFFECT TRANSISTORS, CIRCUITS, RELAKATION  
OSCILLATORS, DIGITAL COMPUTERS, TRIODES,  
SEMICONDUCTORS, DATA STORAGE SYSTEMS (U)

IDENTIFIERS: TRANSLATIONS (U)

A SHIFT REGISTER BASED ON FLIP-FLOPS CONSISTING OF  
D-C-COUPLED FIELD-EFFECT TRANSISTORS IS DESCRIBED.  
TWO VARIANTS, DIFFERING ONLY IN THE RESET CIRCUITS  
FOR EACH FLIP-FLOP, WERE TESTED. THE TWO RESET  
VARIANTS ARE SHOWN. (AUTHOR) (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. B00296

AD-66R 963 9/2 9/5  
WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB  
A MACROMODULAR APPROACH TO COMPUTER DESIGN: A  
PRELIMINARY REPORT. (U)  
DESCRIPTIVE NOTE: TECHNICAL REPT.,  
FEB 66 69P CLARK,WESLEY A. ;  
STUCKI,MISHELL J. ;ORNSTEIN,SEVERO M. ;  
REPT. NO. TR-1  
CONTRACT: SD-702, ARPA ORDER=655

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIGITAL COMPUTERS, SYSTEMS  
ENGINEERING), (\*MODULES(ELECTRONICS),  
DIGITAL SYSTEMS), DESIGN, LOGIC CIRCUITS,  
INPUT-OUTPUT DEVICES, CONTROL SEQUENCES,  
SUBROUTINES, DECISION MAKING,  
GATES(CIRCUITS), FLOW CHARTING, DATA  
PROCESSING SYSTEMS, NETWORKS, ADAPTIVE SYSTEMS,  
ELECTRIC CONNECTORS, ASSEMBLING, MODIFICATION  
KITS, OPTIMIZATION, STANDARDIZATION, GROWTH,  
INTEGRATED CIRCUITS (U)

IDENTIFIERS: \*MACROMODULES, DATA  
AVAILABILITY(COMPUTERS) (U)

THIS IS A PRELIMINARY REPORT OF MACROMODULAR  
SYSTEMS. THE MACROMODULES DESCRIBED ARE  
RELATIVELY SMALL, DIMENSIONALLY MODULAR, STRUCTURALLY  
SELF-SUFFICIENT BOXES WHICH CONTAIN ALL OF THE  
REQUIRED ELECTRONIC CIRCUITS AND MEMORY ELEMENTS.  
ELECTRICAL CONNECTORS ON THE FACES OF EACH UNIT  
PROVIDE ALL POWER AND SIGNAL ACCESS. THE UNITS CAN  
BE INTERCONNECTED MECHANICALLY AND ELECTRICALLY TO  
FORM LARGER ASSEMBLAGES, AND STANDARDIZED CABLES ARE  
PROVIDED FOR ALL INTER-ASSEMBLAGE COMMUNICATION.  
ALL CONNECTORS ARE BACKED BY SIGNAL-STANDARDIZING  
AMPLIFIERS CAPABLE OF DRIVING ANY ATTACHABLE MODULE  
OR CABLE. DATA PROCESSING MODULES ARE ORGANIZED IN  
PARALLEL BINARY FORM WITH WORD-LENGTH MODULUS OF 12  
BITS, AND ARE DESIGNED FUNCTIONALLY FOR ASYNCHRONOUS  
OPERATION. MEMORY MODULES HOLD 4096 12 BIT WORDS.  
(THE NUMBERS 12, 4096, AND OTHER SUCH PARAMETERS  
HAVE BEEN MADE SPECIFIC, FOR PURPOSES OF THIS REPORT,  
ONLY TO SIMPLIFY DESCRIPTION.) THE DESIGN OF A  
SYSTEM BASED ON THESE MODULES REQUIRES ONLY THE  
EXERCISE OF LOGIC. THE OPERABILITY OF THE  
RESULTING SYSTEM CANNOT BE ADVERSELY AFFECTED BY THE  
PHYSICAL DISTRIBUTION OR ARRANGEMENT OF PARTS, THE  
DISTANCE BETWEEN UNITS, THE NUMBER OR DIVERSITY OF  
MODULES, OR THE ROUTING OF THE INTERCONNECTING  
PATHWAYS. MACROMODULAR SYSTEMS ARE, AS A RESULT, (U)

244

UNCLASSIFIED

B00296

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-668 964 9/2 9/9

WASHINGTON UNIV ST LOUIS MO COMPUTER SYSTEMS LAB

THE DESIGN OF A TAPE MACROMODULE.

(U)

DESCRIPTIVE NOTE: TECHNICAL REPT.:

JUN 67 96P LITTLEFIELD, WARREN M. I

REPT. NO. TR-3

CONTRACT: SD-302, ARPA ORDER-699

UNCLASSIFIED REPORT

DESCRIPTORS: (\*DIGITAL COMPUTERS, SYSTEMS  
ENGINEERING), (\*MODULES(ELECTRONICS),  
\*MAGNETIC TAPE), DATA STORAGE SYSTEMS, LOGIC  
CIRCUITS, INTERFACES, TIMING CIRCUITS, CODING,  
RELAXATION OSCILLATORS, PHASE, TEST METHODS,  
INTEGRATED CIRCUITS, COMPUTER PROGRAMS, COMMAND  
+ CONTROL SYSTEMS, WIRING DIAGRAMS, INPUT-OUTPUT  
DEVICES, SUBROUTINES, COSTS

(U)

IDENTIFIERS: \*MACROMODULES,  
DEBUGGING(ENGINEERING), LINC COMPUTER

(U)

THIS REPORT DEALS WITH THE DESIGN AND FUNCTION OF A  
MAGNETIC TAPE SYSTEM MODULE. THE PROTOTYPE WAS  
BUILT OUT OF MECL INTEGRATED LOGIC AND USED IN THE  
PULSE MANNER, AND HANDLES ALL THOSE FUNCTIONS  
PECULIAR TO THE BASIC LINC TAPE TRANSPORT. THE  
SYSTEM WAS INTERFACED AND DEBUGGED ON A LINC  
COMPUTER WHICH WAS PROGRAMMED TO BEHAVE AS A  
MACROMODULAR INTERFACE. (AUTHOR)

(U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-669 277 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
USE OF SOEMTRON CALCULATOR-PUNCHED CARD MACHINES FOR  
THE MECHANIZATION OF CONTROL OPERATIONS (ISPOLZOVANIE  
SCHETNO-PERFORATSIONNYKH MASHIN ZOEMTRON Dlya  
MEKHANIZATSII UPRAVLENCHESKOGO TRUDA). (U)  
JUL 67 14P KORPUS, M. I  
REPT. NO. FTD-HT-23-916-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: UNEDITED ROUGH DRAFT TRANS. OF MONO.  
SREDSTVA I METODY MEKHANIZATSII PODGOTOVKI I  
POISKA NAUCHNO-TEKHNICHESKOI INFORMATSII,  
INZHENERNOGO I UPRAVLENCHESKOGO, MOSCOW, 1965 P207-13  
1945, BY F. DION.

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, PUNCHED  
CARDS), (\*PUNCHED CARDS, AUTOMATION),  
PRODUCTION CONTROL, INPUT-OUTPUT DEVICES,  
AUTOMATA, CONTROL SYSTEMS,  
PERFORMANCE(ENGINEERING), USSR  
IDENTIFIERS: TRANSLATIONS (U)

THE ARTICLE DISCUSSES THE PUNCHED CARD MACHINES  
PRODUCED BY THE PEOPLE'S TYPEWRITER PLANT IN  
SEMFERDA, WHICH ARE USED IN CONTROL WORK:  
SOEMTRON 413 MAGNETIC PUNCH, SOEMTRON 423 MAGNETIC  
VERIFIER; SOEMTRON 432 PUNCHED CARD SORTER,  
SOEMTRON 440 SUMMARY PUNCH, SOEMTRON 402  
TABULATOR, AND THE ASM 18 COMPUTER. SORTER S-  
432 CAN SORT 42,000 PUNCHED-CARDS AN HOUR IN ANY  
DESIRED NUMERICAL ORDER BY MEANS OF A BRUSH BLOCK.  
TABULATOR 402 (GOLD MEDAL WINNER AT THE 1964  
SPRING FAIR IN LEIPZIG) PROCESSES DATA ON 80-  
COLUMN PUNCHED-CARDS AND IS USED IN PLANNING,  
STATISTICS, COMPUTATION, AND SCIENTIFIC RESEARCH; IT  
CAN HANDLE 9000 PUNCHED-CARDS AN HOUR. THE SUMMARY  
PUNCH CAN HANDLE 6000 PUNCHED-CARDS AN HOUR. THE  
ASM 18 COMPUTER CAN BE CONNECTED TO THE TABULATOR  
402. THE ARTICLE DESCRIBES THE AUTOMATIC OPERATION  
OF AN AGGREGATE OF THESE MACHINES, IN WHICH THE  
TABULATOR PLAYS THE KEY ROLE IN THE FINAL PROCESSING  
OF THE RESULTS OF THE ARITHMETIC AND LOGICAL  
OPERATIONS OF THE OTHER MACHINES. (U)

UNCLASSIFIED

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-669 200 9/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
MEMORY DEVICE WITH EXTERNAL SELECTION  
(ZAPOMINAYUSHCHEE USTROISTVO S VNESHNIM VYBOROM), (U)  
SEP 67 JIP SOROKIN, V. N. I  
VASHKEVICH, N. P. I  
REPT. NO. FTD-MT-24-120-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MOSKOVSKOE  
VYSSHEE TEKHNICHESKOE UCHILISHCHE, VYCHISTITELNAYA  
TEKHNIKA (USSR) № P51-7 1966.

DESCRIPTORS: (MAGNETIC CORE STORAGE, DESIGN);  
FERRITES; ELECTRICAL PROPERTIES;  
PERFORMANCE(ENGINEERING); DIGITAL COMPUTERS;  
USSH

IDENTIFIERS: TRANSLATIONS

(U)

(U)

A HIGHLY RELIABLE TRANSISTORIZED TWO-CORES-PER-BIT  
FILE MEMORY DESIGNED TO OPERATE IN DATA PROCESSING  
CONTROL SYSTEMS IS DESCRIBED. IT CONSISTS OF: A  
FERRITE-CORE STACK SERVING AS THE ACCUMULATOR STORE;  
TWO ADDRESS REGISTERS; A SAMPLING CIRCUIT; A CIRCUIT  
FOR GENERATING SAMPLING-CURRENT PULSES; WRITE DRIVERS  
SERVING TO SHAPE POWERFUL CURRENT PULSES DURING DATA  
RECORDING; AN OUTPUT SIGNAL AMPLIFIER; INPUT AND  
OUTPUT REGISTERS; AN OVERWRITING CIRCUIT; AND THE  
OPERATING-CYCLE CONTROL CIRCUIT. THERE ARE TWO  
CORES PER BIT: A MEMORY CORE AND A SWITCH CORE.  
THE MAXIMUM SWITCH TIME OF ANY CORE DOES NOT EXCEED  
4 MSEC. THE MEMORY DEVICE IS POWERED FROM A 24 V  
SOURCE. THE POWER REQUIREMENT OF THE ENTIRE DEVICE  
IS ABOUT 100 W.

(U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800396

AD-649 279 9/2  
ARMED FORCES RADIobiology RESEARCH INST BETHESDA MD  
A TECHNIQUE FOR CONVERTING A KEY PUNCH INTO A  
COMPUTER PUNCHED CARD READER. (U)  
DEC 67 29P BROCATO,L. J. GITELMAN,J.  
J. FROCKWELL,R. W. I  
REPT. NO. AFRR1-TN67-4

UNCLASSIFIED REPORT

DESCRIPTORS: (PUNCHED CARDS, DIGITAL  
COMPUTERS), INPUT-OUTPUT DEVICES,  
SYNCHRONIZATION(ELECTRONICS), COMPUTER  
PROGRAMS, INTERFACES, COSTS  
IDENTIFIERS: KEY PUNCH MACHINE (U)

THE REPORT DESCRIBES A TECHNIQUE FOR CONVERTING A  
KEY PUNCH INTO A PUNCHED CARD READER FOR USE WITH A  
SMALL-SCALE SPECIAL PURPOSE COMPUTER SYSTEM. THE  
DISCUSSION INCLUDES A SYSTEM DESCRIPTION, HARDWARE  
MODIFICATIONS, SOFTWARE ANALYSIS AND A DESCRIPTIVE  
SOFTWARE LISTING. (AUTHOR) (U)

UNCLASSIFIED

DUC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800394

AD#669 419 9/2 4/2  
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OHIO  
AN IMMEDIATE-ACCESS BUFFER (MEMORY UNIT) FOR AN  
ELECTRONIC COMPUTER (BUFERNOE OPERATIVNOE  
ZAPOMINAYUSHCHEE USTROISTVO Dlya ELEKTRONNOI  
VYCHISLITELNOI MASHINY). (U)

JUL 67 20P FEDOROV, V. A.  
REPT. NO. FTD-MT-24-128-67

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: EDITED MACHINE TRANS. OF MIROVOI  
METEOROLOGICHESKI TSENTR, LENINGRAD, TRUDY (USSR)  
NIO P103-11 1965.

DESCRIPTORS: (\*DATA PROCESSING SYSTEMS, \*COMPUTER  
STORAGE DEVICES), (\*WEATHER FORECASTING, DATA  
PROCESSING SYSTEMS), DATA TRANSMISSION SYSTEMS,  
CONTROL, MAGNETIC RECORDING SYSTEMS, MAGNETIC  
TAPE, PUNCHED CARDS, USSR (U)

IDENTIFIERS: TRANSLATIONS (U)

A BUFFER OPERATIONAL STORAGE DEVICE (BOZU) BASED  
ON MAGNETIC OPERATIONAL STORAGE DEVICES AND BUFFER  
COORDINATING UNITS IS USED TO OPERATE THE COMPUTER  
COMPLEX FOR WEATHER FORECASTING AT THE SSSR WORLD  
METEOROLOGICAL CENTER. THE BOZU PROVIDES  
SIMULTANEOUS STORAGE OF INFORMATION FROM DIFFERENT  
DEVICES WITH THE PROPER ORDERING AND PREPROCESSING OF  
THIS INFORMATION. IT ALSO CONTROLS THE OPERATION  
OF ALL DEVICES CONNECTED WITH THE COMPUTER. IN ONE  
ARRAY OF THE COMPLEX THE UNIT AUTOMATICALLY RECEIVES  
DATA FROM COMMUNICATIONS CHANNELS AND RECORDS IT ON  
ONE OF SEVERAL BUFFER TAPES TO ABBREVIATE THE  
COMPUTER INPUT PROCESS. THE SYSTEM CAN ALSO  
PREDIGEST PUNCHED CARDS TO EXPEDITE THEIR INPUT.  
THE BOZU ALSO ACCEPTS THE COMPUTER OUTPUT AND  
EXPEDITES THE DISPATCH OF THIS INFORMATION TO SUCH  
ASSOCIATED EQUIPMENT AS AUTOMATIC CHART PLOTTERS AND  
WEATHER FORECAST TRANSMISSION CHANNELS. THE  
COMPUTER TIME UTILIZATION IS SO EFFICIENTLY  
COORDINATED THAT IN ONE OF THE MOST COMPLEX  
OPERATIONAL MODES THE RECEIVING AND TRANSMITTING OF  
INFORMATION FROM THE COMPUTER REQUIRES ONLY 30% OF  
THE COMPUTER TIME, LEAVING THE REMAINING 70% FOR  
COMPUTER ANALYSIS. (U)

UNCLASSIFIED

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 800296

AD-803 897 9/2  
CARNEGIE INST OF TECH PITTSBURGH PA  
MTHAT ASSEMBLER FOR THE CDC G-21. (U)  
DESCRIPTIVE NOTE: FINAL REPT.,  
44 H2P ROSS, DANIEL S  
CONTRACT: SD-146  
MONITOR AFOSR 67-0256

UNCLASSIFIED REPORT

DESCRIPTORS: (INPUT-OUTPUT DEVICES, DIGITAL  
COMPUTERS), PUNCHED CARDS, INSTRUCTION MANUALS,  
DATA PROCESSING SYSTEMS, PROGRAMMING LANGUAGES,  
COMPUTER STORAGE DEVICES, COMPUTER LOGIC,  
CODING, OPERATION (U)  
IDENTIFIERS: MTHAT, ASSEMBLER(COMPUTERS), G-  
21 COMPUTERS (U)

MTHAT IS A ONE-PASS SYMBOLIC ASSEMBLER FOR THE  
CDC (FORMERLY BENDIX) G-21 COMPUTER. IT IS  
DESIGNED TO BE USED IN CONJUNCTION WITH THE  
CARNEGIE TECH G-21 MONITOR SYSTEM. THE INPUT  
TO MTHAT IS A SET OF PUNCHED CARDS, OR THE IMAGES  
OF PUNCHED CARDS OBTAINED FROM EITHER THE G-21  
CONTROL CONSOLE OR THE REMOTE TELETYPE UNITS. THE  
OUTPUTS ARE G-21 MACHINE CODE IN THE COMPUTER  
MEMORY, USUALLY ONE WORD OF CODE FOR EACH CARD INPUT,  
AND A PRINTED ASSEMBLY LISTING. THERE ALSO ARE  
PROVISIONS FOR COMMUNICATION BETWEEN MTHAT AND AN  
OPERATOR OR PROGRAMMER AT THE G-21 CONTROL CONSOLE.  
MTHAT IS CALLED A ONE-PASS ASSEMBLER BECAUSE  
USUALLY EACH INPUT CARD IS PROCESSED ONCE ONLY.

(AUTHOR) (U)

# **INDEXES**

\*AERONAUTICAL SYSTEMS DIV WRIGHT-  
PATTERSON AFB OHIO

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AD-259 376

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ASD-TDR62 791  
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DRUM  
AD-401 644

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ASD-TDR62 1058  
A TELETYPEWRITER ADAPTER UNIT  
FOR THE DRISROTE APERTURED PLATE  
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AD-402 125

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FERRILECTRICS AS A POSSIBLE  
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\*AEROSPACE MEDICAL RESEARCH LABS  
WRIGHT-PATTERSON AFB OHIO

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A STUDY OF DIGITAL COMPUTERS  
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AD-601 649

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DEVELOPMENT OF AN INPUT/OUTPUT  
TECHNIQUE FOR INTEGRATED CIRCUIT  
SIMULATION COMPUTERS.  
AD-660 847

\*AIR FORCE AVIONICS LAB WRIGHT-  
PATTERSON AFB OHIO

• • •  
AL-TDR64 228  
INVESTIGATION OF ELECTRO- AND  
MAGNETOOPTIC TECHNIQUES FOR  
INFORMATION STORAGE AND RETRIEVAL.  
AD-607 220

\*AIR FORCE CAMBRIDGE RESEARCH LABS L G  
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AD-666 666

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AFCRL-68-0054

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\*AIR FORCE OFFICE OF SCIENTIFIC  
RESEARCH ARLINGTON VA

• • •  
AFOSR-67-0252  
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AD-645 294

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AFOSR-67-0256  
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然而在本研究中，被试在“是否改变”方面的选择，只占了总选择的1%，这说明在本研究中，被试对“是否改变”的重视程度较低。

✓ BREVIGA, P. G.

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\*SD286  
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